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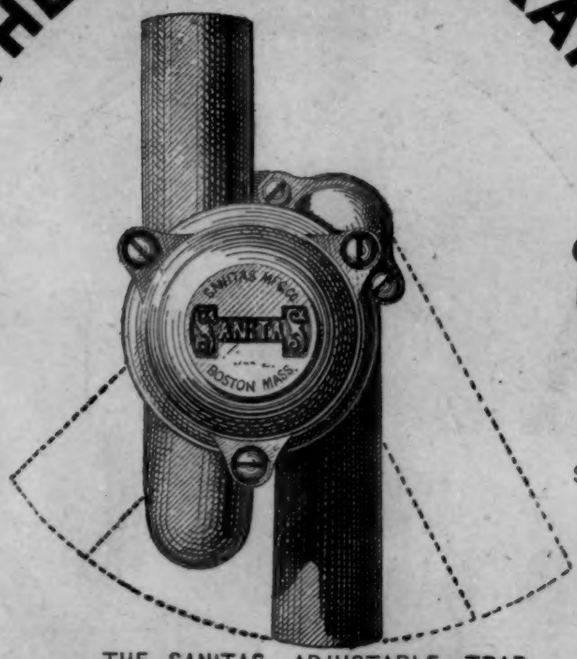

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PROFESSOR EATON, of New Haven, has done the public a service in calling its attention to the advantages of having buildings, particularly public buildings, including monuments, designed with some regard to the artistic impression they will make on the beholder. It is of little use for architects to make representations of that kind, as they are always supposed to do so from selfish motives; but the opinion of a layman of position is sure to be received with interest and attention. Professor Eaton describes the careful preparations which have been made for securing the best work that German artists are capable of in the memorial which is to be erected to the late Emperor William. As most of our readers know, a preliminary competition has been arranged, in which the choice of site, out of a number of available ones in Berlin, which are specified, is left to the competitor, as well as the method of treatment, whether architectural or sculptural, or both, and nearly all other matters except the scale on which the drawings or models shall be made. This preliminary competition is to decide which of the artists engaged seems to comprehend best the character and services of the late Emperor, and when that has been decided, a second competition is to settle what design shall be executed. The jury which will decide in both competitions is to be composed of experts, and the result is sure to be in the highest degree interesting and successful. Professor Eaton remarks that as the contest is to be confined to German artists, the French sculptors will lose the opportunity that they might otherwise have had, to gain an artistic triumph over the great rival nation. We are by no means so sure that the French sculptors would have an easy victory over their antagonists across the Rhine. In combining sculpture and architecture the French are as yet unapproached, probably for the reason that with them a sculptor and an architect always work together, but for power of expressing sentiment by sculpture there is little to choose between the French and the Germans, when both are at their best. Nor, strange as it may seem, would there be much to choose between either and the best Americans, if the latter had a chance to show what they could do. We say advisedly, that if Americans could be properly taught, encouraged by intelligent criticism, in place of the drivel that most newspapers pour out over what they call "art," and kept employed on work that would rouse their interest and enthusiasm, they would equal, if they did not surpass, any civilized nation in the variety and elevation of their sentiment, the vividness of their impressions, and their power of expressing them. There is plenty of evidence that we possess already in this country heaven-born geniuses, capable of opening our eyes almost to a new life, if we would only give them an opportunity, but we never seem to find them, and we are never likely to find them until it occurs to some one that there may be a question about the correctness of the ordinary theory, that any one who can read and write is capable of judging of works of art, and that the more thick-skinned and loud-voiced a man is, the more likely he is to be a great sculptor. When some American shall take it into his head to have the inside or outside of his house adorned, as it would be in the Berlin residence of a German noble, with beautiful and touching sculpture, the beginning will have been made of a new step in American civilization. He would probably not get what he wanted, for there are only half-a-dozen persons at present in this country who could furnish it; but if he successfully resisted the temptations that would be presented to him, to "let the job out by contract," or to have the work done in papier-maché, or in stamped zinc, or reproduced by casting from some foreign example, and had the discretion to avoid the old stagers from Rome, and the belauded favorites of the society newspapers, who would seek his favor, he would at least put it into the head of some people who loved that sort of work to try to learn to do it well, in the hope of employment, and of other citizens to desire similar but better work in their own houses, and to look for persons to do it for them. By that simple process a demand for "art" would have been created which horrid-looking acanthus-leaves seven feet long could not supply, and sooner or later some one would be found who could do what was wanted, and thus furnish a point of departure for the next step. In fact, the first step has already been attempted. General Meigs, in the Pension Office at Washington, has introduced a terra-cotta frieze, or rather band, of historical subjects, which is not only interesting, but contains some beautiful work; several good pieces of interior sculpture are to be found in New York, and Governor Ames, of Massachusetts, has a well-meant band of sculpture around his house in Boston, which, by the way, was put there at his own suggestion. The next thing is for others to do the same, on a smaller scale, if they wish. The size of the sculpture has nothing to do with its value, and the possessor of a panel a foot square may find himself famous on account of it, if he will take pains to have it good, and to put it where it can be seen. If the present generation did nothing but build rock-faced walls, with one small panel of such sculpture to each house, it would have prepared a sure foundation for the most brilliant architecture that the world has ever seen, and there is no way in which the preparation for such an architecture can be so well made.

PROF. IRA O. BAKER, of the University of Illinois, writes to the *Clay-Worker* a letter on the crushing-strength of brickwork, which is interesting, but needs, perhaps, a little comment. It seems that at the recent Convention of Brick-makers, one of the members expressed himself as being "provoked" at the "absurd ideas" commonly entertained in regard to the resistance of brickwork to crushing. During the discussion which followed this declaration, another member said that "a brick wall, laid in excellent mortar, two feet thick, and of ordinary brick, will stand its weight two hundred feet high," while a third referred to chimneys that had been built two or three hundred feet high. As these chimneys were, of course, built thick at the bottom and thin at the top, their height affords no indication whatever of the crushing strain upon the base; and the second speaker's impression, that a good brick wall would stand the pressure due to its own weight if built two hundred feet high, is far within the limit accepted by those "absurd" persons, the architects and engineers, who commonly allow a pressure of fifteen tons per square foot on good brickwork, equivalent to the weight of a column of the same brickwork of uniform dimensions in plan, and about two hundred and sixty-eight feet high. Professor Baker, however, throws the usual data completely aside, and says that in some experiments made by himself brick piers in lime-mortar have resisted a pressure of one hundred and eight tons per square foot, while piers in Portland cement have stood one hundred and eighty tons per square foot. He asks whether "any one ever heard of brick masonry being crushed by any load brought upon it in an actual structure," and evidently thinks that the ordinary limit for crushing-strength of brickwork is set far too low. In regard to his question, whether any one ever heard of the actual failure of brickwork by crushing under the load brought upon it in a building, we can say at once that we have.

Some years ago a building fell in Denver, Colorado, under circumstances which showed plainly that the failure was due to the crushing of the brickwork under the ends of a large wooden truss which supported the front above the first story. It is true that the bricks, a sample of which was sent to us, were poor, but the load on the wall, which we computed at the time, was far less than that which Professor Baker's piers sustained safely. How many other cases of the kind there may have been we cannot say, but our impression is that they have been tolerably numerous. The former Superintendent of Buildings in New York, Mr. Esterbrook, would not pass plans which showed that the possible load on any pier or wall of brick exceeded fourteen tons per square foot, and as this limit is different from that given in any book with which we are acquainted, we suppose that it must have been founded on experience with the New York bricks, which are ordinarily of excellent quality. In most places, we think, the limit is fifteen tons per square foot, which is about equivalent to Professor Baker's result for crushing, with a factor-of-safety of seven; and as a factor-of-safety of six is commonly used for members subjected to a crushing strain in buildings, and is specified by law as the minimum in some places, we doubt whether, even on Professor Baker's results, the usual limit can under ordinary circumstances be with prudence exceeded.

THE investigation in regard to the Assembly Chamber ceiling at Albany has been pressed with more zeal than at one time seemed likely to be expended upon it, and, although nothing will probably be discovered, the principal actors in the affair have been made temporarily nervous, and have scattered to parts unknown, taking their books with them. The immediate cause of this ignominious flight appears to have been the failure of the attempt to get experts to testify that there was no ground for the report of the first commission. One architect did, it is true, testify that he did not think there was an unreasonable profit in the contract, but he did not say what he considered an unreasonable profit; and, as another expert said that the profit was one hundred and thirty-five thousand, two hundred and seventy-four dollars and a half, or just one hundred per cent, the contractor probably thought that there might be persons who would consider that too much, and that he had better withdraw himself from the public eye until the unfortunate affair had blown over. Another reason for his sudden fit of modesty is, perhaps, to be found in the fact that when his examination before the committee had shown him that he could neither frighten the committee, nor satisfy their curiosity, by calm insolence, and that they were likely to take what the New York *Tribune* calls the "most extraordinary step" of compelling him to show his books, he, or some one else for him, made the mistake of having the books tampered with, by alterations and interpolations, so as to conceal what he had really done with the money. He forgot that there are a hundred men who can detect a falsification in an account-book for one who can detect a defect or a fraud in a piece of construction, and the immediate exposure of the alterations rendered him liable to questions which he preferred to avoid answering. He seems, however, to have found a worthy successor as a witness in the person of the sub-contractor, Mr. Sullivan, who, when his time-keeper testified that the main beams in the ceiling, instead of being of iron, as required by the specifications and contract, were of wood, "explained" that "they were lateral beams," and "had to be of wood, as iron could not have been successfully used." It would puzzle an architect to say why iron could not have been used for the lateral beams as well as any other part of the structure, but we must remember that the persons principally concerned in the matter, instead of regarding it from the architect's standpoint, seem to have looked only to the most efficient method of doing the worst possible job for the largest amount of money; and from this point-of-view the employment of iron would be less successful than that of wood in places where the latter could be made to hang together.

THE cause of the disaster at Hartford, by which a hotel was blown up in the middle of the night, and many persons killed, is now definitely known to have been the fastening down of the safety-valve of the boiler by one of the two engineers, probably with the knowledge of the other; and both engineers have been held for trial on a charge of manslaughter. Although the building was proved to have been weak and badly built, the verdict states that there is no evidence that this contributed to the result, for the explosion must have been violent enough to destroy any building, however strong, in which it occurred. It seems from the evidence that some complaint had been made of the lack of steam in the morning, and the engineers found that a simple way of overcoming the difficulty was to keep up a good fire during the night. Sometimes the fire was too good, and the steam-pressure ran up so high that the safety-valve blew open. This startled the inmates of the house, who made complaint, and the ingenious engineers then provided for the new difficulty by fastening down the safety-valve so that it could not blow open under any circumstances. How effectual their precaution was the result showed. It would be interesting to know how many more steam-boilers in our large cities have their safety-valves tied down, for fear they may blow open and frighten their owners. Probably the number is by no means inconsiderable.

MR. CHARLES S. FROST, the architect of the Owings Building, in Chicago, in which some of the floor-arches fell a few weeks ago, writes us to say that the account of the matter in the daily papers, on which our comments were based, was entirely erroneous, and that the total damage due to the accident, which seems to have been caused by the injudicious handling of a heavy water-tank in the upper story, did not exceed four hundred dollars. Mr. Frost adds to this explanation an observation, the justice of which we meekly acknowledge, to the effect that it would have been becoming in us to have made "at least some effort to get at the truth of the matter, before publishing such statements." We think we can honestly say that we do not lightly give circulation to reports in regard to buildings which may affect the reputation of their architects or builders, and we are sorry that the exaggerated reports of the accident in the daily papers should have been plausible enough to mislead us, but while making this apology to Mr. Frost, we hope he will consider that it is rarely possible for us to send experts to investigate occurrences of the sort, so that we must rely on the ordinary accounts, unless some of the people on the ground, who can see and comprehend the facts, will do us the great service of writing to us their version of them. If several accounts, from different persons, should be sent of the same thing, it would be so much the better, and if we could receive them early, we should often be put in a position to render effective service to the architect or builder, in counteracting the erroneous impressions given by the ignorant and sensational reports in the daily press.

WE heard an Englishman once inquire how much rent was asked for a certain house in New York. The house was a tolerably modest one, on a side street. He was told that the rent then paid was eight thousand dollars a year. He apologized for not having made himself understood, and explained that he had not asked the price of the house, but only wanted to know the annual rent. On being told that this was what the tenant paid every year, he was overwhelmed with amazement, and expressed the opinion that Buckingham Palace was the only house in London which would command anything like such a rent, and he doubted whether even that would fetch so much. To Americans it is a standing wonder how English houses can be rented so cheaply, considering the fact that building costs nearly or quite as much in England as here, and that houses being built on ground-leases for the most part, the interest on the value of the land, as well as a sinking-fund for reimbursing the value of the building during the term of the ground-lease, must be paid by the tenant. The *British Architect* gives a description of some new houses now offered for rent near London which is calculated to make a New Yorker envious. The houses in question stand in Bush Hill Park, a large estate which has recently been improved by building a number of picturesque houses surrounded by gardens, in which the old trees on the estate have been preserved. One of these houses, containing on the ground-floor a recessed porch with a tiled-floor, a drawing-room sixteen feet long by thirteen and one-half feet wide, a dining-room fourteen feet long by the same width as the drawing-room, a square hall, with two roomy closets, a staircase having an oriel window on the landing, a kitchen, scullery and coal-house, with four chambers, bath and water-closet above, a roomy garden in front, and three thousand feet of land in the rear, rents for one hundred and fifty dollars a year. Others, with larger rooms and more chambers, and about twice as much land, are rented for two hundred and fifty dollars, and some of intermediate quality for two hundred dollars a year.

EARTHQUAKES.[1] — II.

THERE remains to be explained many of the peculiarities of earthquakes accompanied by aërial tempests, water-spouts, hurricanes and whirlwinds. These earthquakes are the most frequent, and it is perhaps the observation of these which suggested the theory endorsed by Aristotle in regard to these phenomena. From the farthest antiquity, moreover, atmospheric perturbation accompanying great terrestrial shocks have been remarked. It is narrated in the song of Deborah and Barak in the passage where it speaks of the people of Israel in the neighborhood of Sinai, "*Domine, cum exires de Sahir et transires per regiones Edom, terra mota est, cœlique ac nubes distillaverunt aquis.*" In several psalms we also find analogous descriptions which, although written by inspired men and prophets, agree perfectly with observations which have been made later by physicists and naturalists. Consequently it cannot be denied that the great convulsions of the earth are very commonly connected with violent rainstorms. How, then, reconcile the theory of terrestrial vibrations with the meteorological perturbations which so often accompany the earthquake? Father Galli succeeds in doing this by means of a very ingenious comparison. He recalls the discovery of Chladni, so admirably explained by Faraday, and fully confirmed by the experiments of Savart, to wit, that the powder of the lacopods is concentrated in little round balls upon the protrubrances rather than along the nodal lines, because it is raised up with a circular motion, and transported by little whirlwinds which are formed where the vibrations are strongest. It is only needful to apply this theory on a much greater scale, to understand that the mighty vibrations of the ground can give birth to the local cyclones which ordinarily accompany earthquakes.

Certain other phenomena have been noted, which seemed to appeal against the vibratory theory, but which the author has succeeded in interpreting practically in a sense favorable to his theory. For example, after some earthquakes there have been found statues and even pyramids moved from their bases, and sometimes even overthrown. Now listen to the experiment to which Father Galli had recourse to explain these facts: He took one bracket of marble and one of slate, of dimensions absolutely equal, and built them solidly into the wall without any other support. He then built on each of these two brackets a pile of prisms of hardwood, of the same height and with rectangular bases. He then made the front of each of these brackets vibrate by rubbing with a stick upon his finger resting against this same side. The effect in both cases was the same. If the front face of the pile was perpendicular to the axis of vibration, the prisms were displaced from the front backwards, preserving a parallel alignment; but if the anterior face of the pile was oblique to the axis of vibration, the prisms all turned to the same side with an angular displacement increasing from base to summit, and bending to right or to left, according to the character of their obliquity. It seemed to result from this with perfect certainty that the earthquake is nothing more than an essentially vibratory movement of the crust of the globe, and that the waves of earth are veritable waves of vibration similar to those which a shock produces on the surface of non-oleaginous liquids. Consequently the rocky mass does not move, does not oscillate, and the displacement of some bodies, the slipping of some superficial layer, the turning movement of stone prisms, the oscillations of walls and trees, are only various effects of vibratory movement, which alone or in combination with the action of gravity, are transformed into reflex movements determined by all of the conditions of equilibrium of bodies and the laws controlling the communication of the movement. The surface of the soil vibrates as does the surface of water in longitudinal and transverse vibrations; and when this vibratory movement is propagated in a horizontal direction the transverse vibrations are the most extensive, and become vertical, that is to say, are effected in the plane of the least resistance. The superficies enveloping these elementary waves becomes a crest, more or less elevated, which sometimes becomes visible, and which always is felt in passing by the successive upheaval and sinking of the ground. This movement is very improperly called saltatory, when in reality it ought to be considered as a phase of undulatory movement.

These principles once stated, it becomes of the greatest importance, from the point of view of the solidity of habitable buildings, to know the different degrees of conductivity of the terrestrial strata. For this we can have recourse to the remarkable and recent studies of Professor Fouqué, who by the aid of explosives and by the employment of electricity and photography has been able to obtain very precise results. Thanks to these studies we now know that different geological formations offer very different degrees of rapidity of transmission, the proportions of which are arranged in the following table for the principal strata:

In granite the mean rapidity is from 2.450 to 3.141 metres per second. In compact coal-bearing sandstone, from 2 to 2.526 metres; in less compact sandstone, from 1.190 metres upwards; in Cambrian marble, .632 metres; in the sandstone of Fontainebleau, .300 metres.

[1] Continued from No. 687, page 92.

We are thus assured that the more friable and porous the layer is the less proper it is for transmitting vibrations, and also that its power of conductivity increases in direct ratio with the adherence of the molecules which compose it, so that a strong shock passing from a rocky piece of ground to one which is sandy loses, little by little, its rapidity and its intensity, and finishes by being wholly absorbed. In short, clayey, pebbly and dusty soil should be the least subject to receive and propagate heavy terrestrial shocks. This is the reason, for example, that Northern Belgium and Holland, formed from the alluvium of the Rhine, the Scheldt and the Meuse, have rarely been desolated by earthquakes, and the same can be said of all the countries where the geological structure resembles that of the Netherlands. In Italy also, although the land is generally volcanic, and the country very subject to convulsions, the zone comprised within the delta of the Po is, as a rule, exempt from them. In the month of March, 1873, a shock of very general violence, having its centre in the Paduan Campagna, shook the whole peninsula from the Alps to the very extremity of Calabria. Now, cities placed on the borders of the delta of the Po did not experience the shock, although they were only a short distance from the focus of radiation. On the morning of the 19th of January, 1873, a strong shock was felt at Rome, but the inhabitants on the isle of St. Barthelmy, which is formed of "made" land, had no knowledge of the event.

Herodotus has stated that in the Scythian region which surrounds the marsh Mæotis, by others called the Sea of Azov, the shocks are so rare that they are considered a prodigy. Now, this region is essentially oozy, because of the alluvium brought down by the several rivers which surround it, and especially by the Dneiper, the Don and the Kuban. A great part of Northern Germany possesses the same characteristics. It is for this same reason that Lower Egypt, comprised between Lake Mœris and the mouth of the Nile has always enjoyed a kind of immunity from terrestrial convulsions. In like manner Mesopotamia, formed by the alluvium brought by the Tigris and Euphrates, enjoys an analogous privilege. Persia on the other hand, although only a short distance off, has frequently been troubled by earthquakes.

The experiments of Dr. Fuchs have once more made it possible to determine an important point of the scientific theory which relates to the convulsions of the earth; namely, that vibratory waves are not transmitted in the same manner at the surface of the ground as beneath it. At the surface an instantaneous upheaval creates a series of three or four successive waves, so that the movement lasts quite a long time. In the depths of the earth, on the contrary, there is only one single wave, and the movement stops quite suddenly, as well in a horizontal sense as in a vertical. A characteristic difference also, which experiment has always confirmed, cannot be accidental, and corresponds perfectly to the two forms of vibration which have been mentioned above: at the surface the resistance is least for the transverse vibrations which become the prevalent motion and spread themselves about with the greatest freedom; but beneath the surface there is great resistence to transverse vibrations as well as to longitudinal ones, and the only movement transmitted is that produced by the shock, while that which results from the elasticity of the body is non-existent.

In the actual state of things, what is the best means to follow to make habitations as invulnerable as possible? The conclusions of Father Galli on this point are of capital importance for the arts of architecture and construction, and in a few words are these: "Observation has demonstrated that on the ground-floor shocks are not very easily perceived. Now, if it is true, that the movement is essentially vibratory, if the most intense, the most extended and consequently the most dangerous vibrations are those of the superficial layer, it must be inferred that the shock received through the walls is not easily transmitted to the ground which they enclose and that the foundations present a considerable resistance to the passage of the wave. If, then, a house should be entirely surrounded, at a little distance off, by a wall with deep foundations, very solid and well built, this protecting wall would absorb the violence of the shock and would suffer injury in place of the enclosed building. If, more than this, there should also be arranged a vacant space between this wall and the ground which supports the house, we should then believe that the building would be almost entirely protected against vibration. In cities this system would certainly seem to be very expensive, but this difficulty could be overcome by protecting several buildings collected into one group. Besides, the question of expense disappears when it becomes really a question of protecting human life, and rendering impossible irreparable catastrophes such as those which in these last years have had Andalusia and Liguria for a theatre. It is a question in short of constructing such harbors as shall shelter human habitations from terrestrial storms, and of protecting them by dikes and quais, which form an almost insurmountable barrier to the undulation of the ground, just as we construct harbors to protect our ships against the fury of the seas."

This is not to say the kind of protection proposed by Father Galli makes it impossible for a building to be overthrown; but what difference does that make? We have seen ships perish in port when the riot of the elements had reached such a degree of violence that it exceeded everything that human imagination had been able to foresee; but all the same, this has not afforded a reason for not building harbors for ships.

In any event, there is in this book of Father Galli's several ideas

worthy of being studied by architects and constructors, who possess all the technical information needful for judging the possibility of making application of them. They can now establish rules on this subject when they know what are the kinds of soil which they ought to choose by preference for their buildings to guard them naturally, and protect them from violent shocks. H. Mereu.

RECENT EXHIBITIONS AND SALES. — FACILITIES NEW YORK OFFERS TO THE STUDENT. — THE REAL TRAINING AT THE ECOLE DES BEAUX-ARTS. — DRAWING CLASSES. — READING.

We are at the height of the exhibition season, and nothing short of a daily chronicle would suffice to keep track of the noteworthy examples of painting, sculpture, bric-à-brac and furniture passing before our eyes.

The Water-Color Society's exhibition was opened in a charming and novel manner this year by a brilliant costume ball. The ball was for the benefit of the Society of Decorative Art, and was a social and artistic success, the water-colorists courteously offering the use of the Academy, all draped and ready for their own opening. The exhibition was above the average, and especially charming in effect from the draping of the rooms with delicate, light-toned stuffs. Maynard's "Sirens," which took the Evans prize of $300 for the most meritorious water-color exhibited, was deserving of its distinction.

The exhibitions and sales of the Stebbins collection, with good examples of modern French painters, the Howell collection, with notable French landscape work, and three or four more really good collections can only receive passing mention, though any one of them deserves a column.

The sale of the late F. O. C. Darley's paintings and drawings was a vivid reminder of progress made. The Artists' Fund was no more and no less interesting than in other years.

The monthly exhibitions of the Union League Club mark a departure that is full of interest. Besides the usual loan of pictures by the members, they were asked to contribute from their collections rare specimens of porcelains of special types. Last month was devoted, I believe, to *sang-de-boeuf* glazes, and this month there is a really beautiful exhibition of blue and white. Rare pieces have been loaned by Mr. Walters, of Baltimore, by gentlemen from Washington and Chicago, and Messrs. T. B. Clarke, Charles A. Dana, James A. Garland, and other well-known collectors of this city have contributed. It is really a revelation to see such a wealth of rare and exquisitely beautiful examples brought out to illustrate a single small branch of art. Amongst the pictures, Frank Millet's "Old New Amsterdam" interior pleased me most.

I had nearly forgotten an acquisition to the Metropolitan Museum collections — Mrs. John Crosby Brown's recent gift of her collection of musical instruments. There are amongst them, I am told, many exquisite examples of artistic workmanship, delicate inlays and carvings of curious and suggestive forms. The only collection said to be comparable with it is the one at South Kensington.

I have been asked what facilities New York offers a young and ambitious draughtsman for pursuing his studies after office-hours, and I am somewhat puzzled how to answer. There are and can be but few opportunities for systematic evening study, but there are unlimited opportunities for learning and development. The first thing for a young man ambitious to rise in his profession to do is to create a sympathetic atmosphere about himself, and to so train his perceptions as to get the most good out of his surroundings.

When I went to Paris to enter the Ecole des Beaux-Arts, I was somewhat prepared to adapt myself to the conditions there, for I had enthusiastic and appreciative friends who had been there before me. Presenting myself and my credentials, I suddenly found myself member of an *atelier* or studio, one of a group of thirty or forty students under the direction of a well-known architect, a brilliant Prix de Rome man, and then engaged upon one of the public buildings. If I had counted upon this architect, upon the lectures or examinations, or upon the designs required under the programmes for my training, my time would have been wasted; and I say this not in depreciation of the school and its curriculum, but, on the contrary, to point out how much deeper than the mere courses of study is the real work done there. The students amongst whom I thus found myself thrown lived in a miniature republic, an ideal commune, with a body of traditions and unwritten laws, to which each must give loyal adhesion or withdraw. Each member took rank according to his achievements in the common pursuit, and all outside considerations were, so far as possible, eliminated. It was decidedly bad form for one member to be appreciably wealthier than another, and titles were not obtruded. One man, I remember, was known as the "Cassowary" on account of his tufted hair, and it was over a year before I discovered that his real name was an historic one, and that he was Vicomte. Our schooling disappointed me at first. Indeed, it was not until some time after I had returned to my own country that I fully understood all its advantages. The *nouveau*, upon being introduced and going through a few simple formalities, was put through a course of initiatory teasing, intended to test his temper and measure his goodfellowship. It was pretty severe sometimes, but never cruel or ill-natured. Once passed, the *nouveau* was admitted to companionship, but must not forget that he was a *nouveau* and knew nothing. He was expected to do cheerfully all the routine drudgeries for the more advanced men: stretch paper, grind India-ink, black-in the plans, or make tracings. These duties were gradually delegated to still newer arrivals, and progress depended upon individual quality. Each must still be helpful in lightening the labor of men above him by doing whatever he was best fitted for. One could give or take assistance in all the inessentials: the sketching-in of statues or of backgrounds, the laying of washes, or many other such things; but it was one of the unwritten laws — never, I think, transgressed — that no student should accept the assistance of a comrade in the vital and essential features of design, although counsel and criticism was constantly and freely given and received. Our *patron*, or director, spent but little time in the *atelier*, and most of the attention was given to the older men, with a word of encouragement here, or of warning there, to the others; just enough to keep them in mind. The students to whom he gave his greatest care were bound, in their turn, to look after the others. They thus had the added advantage of at once practising and testing all they learned, and the others gained, too, in that, instead of one director and teacher for a few minutes, they had several working at their elbows all the time, and so far companions and friends that modest doubts and aspirations could be aired without the paralyzing feelings inspired by the presence of such immeasurable superiority as the *patron's*.

Here, then, was the great principle governing our little community; a mutual helpfulness from the lower to the higher in things manual and an equal helpfulness from the higher to the lower in things spiritual, and with this, the constant progression of the individual and the liberty to attain the best it was in him to do. We lived together in an absolute community of interests. Went to the galleries and museums, went sketching, travelling, lunching, in knots and groups, and talked and fought and sang amongst ourselves. It was sometimes difficult to pick out the grain of architectural wisdom from the atelier chaff, but it is clear in looking back that we all thirsted for knowledge and power and even our play felt the influence of our more serious aspirations. I have given this bit of personal experience because I could not otherwise explain so clearly what I meant by a sympathetic atmosphere. It is perfectly attainable, here as well as in Paris although it does not always exist where one would most expect it. A young draughtsman should of all things, fight shy of offices where there are no enthusiasms for the things beyond the scope of the day's work, or the week's pay, better go elsewhere even if the pay be less and the daily work less ambitious, if only generous enthusiasms are at home there.

As to what disposal may be profitably made of the evenings, I can only make a few suggestions. The Architectural League is open to all draughtsmen over twenty-one and is not expensive. Besides, whatever may go on of interest at the meetings, the acquaintances and friendships formed will help to keep one posted as to what is going on elsewhere. Professor Ware gives a course of Wednesday evening lectures at Columbia College, to which all are welcomed, and which are charmingly instructive and bountifully illustrated.

It is worth all it costs and more to keep the run of the various exhibitions and to go often, with a fellow architect if possible. Paintings, sculpture, bric-à-brac, old furniture and many other interesting things are exhibited previous to sales and one soon learns to avoid the trash, so that besides the Academy of Design and the American Art Association you can count the Fifth Avenue Galleries and Leonard's rooms, and to give zest to an afternoon stroll places like Knoedler's, Bausserd, Valadais, Sypher's-Deween's and the Japanese Trading Company. A little courtesy and tact will always open the way into these shops and a display of real interest will draw out a fund of interesting information.

A course of drawing from the figure or from casts can be taken in the evenings either at the Metropolitan Museum Schools, corner of 49th Street and 3d Avenue; at the Art Students League, 17th Street and Fifth Avenue, or at the Cooper Institute where those unable to pay are favored and where the work is more elementary: the Museum and Cooper Institute also have classes in modelling.

Reading is a more difficult matter, and outside of books of general reference such as are to be found in the Mercantile Library, one can only consult the architectural publications under restrictions, at the Astor Library, the Society and Lenox Libraries and at Columbia College. The hours and privileges vary so that it is impracticable to give them here, but a direct application personally or by letter will show how far they may be individually available. To study the more scientific branches, construction, strength of materials, perspective stereotomy, etc., the most practicable way is to get a few fellow architects to go in together and form a private class either for mutual help with good text-books or better, under the tuition of some recent graduate.

The one caution it occurs to me to give is to cultivate a live interest in all good art whether it be painting, sculpture, music, literature or the play and do not be afraid you are not perfecting

yourself as an architect because you are not always studying architecture. There are times when Henry Irving will do you more good than Vignola and when Wagner is more to the purpose than the best work on transverse strains. Architectural requirements are complex and involve artistic, mechanical, business and social questions of all kinds and degrees.

THE STANDARD CLUB'S NEW BUILDING. — THE FALSE REPORTS CONCERNING THE ACCIDENT AT THE OWING'S BUILDING.

PROBABLY no one fact shows so plainly the rapid change here from a comparatively small city to a wealthy metropolis as the increasing number of social clubs, together with the rapid increase both in number of members and wealth of the older ones. There are now in Chicago fully twenty such associations in a most flourishing condition. Of this number probably one-half have clubhouses that belong to themselves, and during the past month one of the older of these social organizations has opened its new home with the usual formality of a large reception. The building being finished and occupied, one is now able to examine it intelligently and pick out the points that do not appear to be in harmony with the usually accepted ideas of architectural composition.

The new house of the Standard Club is located at the corner of Michigan Boulevard and Twenty-fourth Street, and, according to the daily press, has cost over $100,000, exclusive of land. The two street fronts are faced with Bedford limestone of a grayish tone. This stone, while one of the cheaper stones in our market, is still one of the best. It almost goes without saying that the structure is "rock-face," for nearly the whole city — or the architectural portion of it, at least — seems to have gone crazy on this kind of work, and nothing is thought of but rough and jagged stone: here, indeed, some mouldings have been cut, but their comparatively small number and the total absence of carving (except one minute line near the top where it is scarcely visible) give to the whole building the general rock-faced air.

If, as some claim, every building should by its exterior indicate what is its purpose, no one would be surprised if the public at large rarely guessed correctly the end and aim of this building. A more strictly commercial-looking construction it is almost impossible to imagine; as for beauty of outline, as well talk of the beauty of outline of a dry-goods box, to which in shape it very nearly compares. But, having such a plain contour, why, at least, the comfort and consolation of a good cornice with its attendant shadow was denied, is something that seems incomprehensible; for in place of some good lines and projections, one is left with the involuntary impression that it was maliciously clipped off, or else that the owners had the thrifty idea of eventually putting on some more stories, without the expense of taking down any useless cornice since the coping stone (the only member now there) would, with small outlay, answer capitally for a sill-course to the new story. The outline of the house being entirely devoid of artistic form, the effect of the structure could certainly have been greatly improved by some color effect, and an extremely careful study of the shapes and combinations of the openings. The former was certainly not even attempted, for the whole mass of the building (except a few buff terra-cotta panels under the windows) is an even gray, the color of the stone, and this monotony is made still more apparent by all the woodwork of the windows being painted the same general color as this facing, so that there is absolutely no relief for the eye. Had economical reasons rendered it necessary to use only one stone, a much happier result could, without question, have been obtained by a more careful study of the method of jointing the stonework. Above the first story one can discover no study of this kind, for through the upper three stories the thickness of the courses of stone are so nearly, if not absolutely, alike as to add monotony to the already monotonous color. Again, the shapes and combinations of the openings are not entirely agreeable to the eye, semicircular and square-headed windows alternate with each other in the same story without any apparent reason for such changes, while large and small windows, some extending through two stories and others only one, do not give a harmonious effect to the general exterior.

The main entrance, which is at the side, is one of the best features of the building, being a generous arch with a fine sweep. Unfortunately, the interior of the vestibule was left rock-faced, and, as a natural result, the fitting of the woodwork of the inner doors against this stone, though resulting in an irregular contour line, has not from an artistic point been what any one could call a success.

The gas-fixtures, both in this vestibule and at the sides of the entrance, are too insignificant and cheap to bear description, and, although the architects probably had nothing to do with their designing, it would certainly have been wise in them to have made arrangements for the one in the vestibule ceiling, so that it would have come in the centre of a panel, rather than in the middle of a moulding, as is now the case. The interior of the house is said to be extremely satisfactory, both in arrangement and decoration, and in many parts is very handsome. It is certainly to be hoped that such is the case, for the part of which the general public gets the benefit cannot fairly be qualified by any higher compliment than that it appears massive and bold.

From the wide publicity that has been given throughout the whole country to the accident that happened recently at the Owing's Building, an impression has gone abroad that it was a casuality of most serious nature, while, in fact, it was not so, as $500 will more than cover the cost of repairs. It was an accident that might have happened in any building of similar construction where workmen were careless, and, moreover, such things have happened in several of our buildings here without any notice being taken of it either by the daily or professional press, although the damage, certainly in one case, was nearly four times as great. Occurring, as it did, on Sunday, the Monday morning papers gave this particular accident all the space possible, in order to "fill up" what is ordinarily the most dry and uninteresting issue of the whole week. Reporters were flying around until late Sunday night, even routing some architects out of their beds to get their opinions — and they generally got them, though in more forcible than polite language. But, notwithstanding all the talk, probably not a dozen architects took the trouble to go around to the building the next day to look at the débris.

PROPOSED ONTARIO PROVINCIAL ASSOCIATION OF ARCHITECTS. — THE EFFECTS ON ADJACENT LAND OF HEIGHTENING THE EMBANKMENT AT MONTREAL. — DIFFERENT METHODS OF QUOTING PRICE OF LAND AT TORONTO AND MONTREAL. — THE TORONTO BOARD OF TRADE COMPETITION.

A VERY decided step has been taken within the last month by the Toronto Architectural Guild towards the establishment of the proposed Ontario Provincial Association of Architects. Draft by-laws have been prepared, and a copy forwarded to every architect in the Province, with an invitation to attend a general convention on March 21 to discuss the subject and provide actual and definite means for the object in view. The invitation bears the request that all the architects in each town or city will meet and go over the by-laws, with a view to expediting matters at the convention, so that from every place men coming to the meeting may be prepared to the fullest extent. The Hamilton architects, so the daily papers announce, have already met, and are taking the matter up warmly. From Ottawa comes an expression decidedly in favor of the notion, and the promoters of the scheme have every hope of the convention being a great success. Some architects in Quebec, who, of course, cannot share the benefits of an Ontario association, wish the Toronto men would go further and get up a *Dominion* association, but that is quite out of the question. Montreal architects, who are decidedly in the majority, must learn to control their jealousies, and the English and French elements must amalgamate first before any such universal scheme could be promulgated.

A few months ago I sent you an account of the works carried out by the Harbor Commissioners of Montreal in deepening the ship-channel of the River St. Lawrence. Another engineering scheme is being discussed which will probably involve an outlay of $3,000,000. It is proposed to widen the street (Commissioner Street) that runs along face of city, riverwards, to an extent that will give it an average width of ninety feet; to raise the present quay and wharves to the level of this street (they are at present some fifteen feet below, and entirely submerged every winter), and do away with the inclined roadways from the street to the quays; to build a parapet-wall to keep out the floods; and to construct an outer wall in the river, enclosing the whole harbor.

Apart from the question of cost, this great work as a whole cannot be carried out without a very careful investigation of the consequences likely to ensue. The first question is: Where will the water that usually occupies the space it is now proposed to fill up by raising the wharves and quays go to in the winter. As I have before explained, the river rises as much as forty feet in some springs, and if the water can no longer spread itself out to the northward over the city of Montreal, it is likely to overflow the south shore to an extent far more serious than heretofore, and the villages of St. Lambert and Longueille on this shore would be buried. There can be no doubt that the benefit of such a scheme would be immense to Montreal, and therefore the villages must, perhaps, go to the wall, but something must be done in the interest of the inhabitants to save them from sudden and overwhelming inundation. One night would

be sufficient to destroy the villages when the ice-dam gives way: the irresistible torrent of water, laden with tons of ice in blocks, would sweep the south shore clean. However, the engineers who have the matter in hand are not likely to do anything rash. Experience with other improvements of the kind in other places has shown that "after-effects" must be duly considered. When the Thames embankment was widened, and at Westminster and Chelsea the river was narrowed by one hundred feet for a considerable length, the flood-water in the spring, unable to get away as fast as before, spread out above London over a far greater area, so that even at Wallingford, at a distance of fifty miles from London, the floods are worse now than before.

With the prospect of an early spring, the building trades are brightening up, and there seems to be every prospect of a considerable amount of work being begun as the frost comes out of the ground. Usually the first of April is the day by which excavating work can be commenced, but, with the short winter and the lack of the usual amount of frost, such work will in all probability be started a fortnight earlier this year. The value of real estate seems to be steadily on the increase. Prices are rising rapidly, and new property has recently been put into the market. New districts, as they are opened up, are commanding very high prices. The rapidity with which Toronto is increasing in area is something astonishing, outlying suburbs being annexed, and neighboring districts being laid out for building estates north, east and west. Montreal is less favorably situated for such extension, owing to the "mountain" which bounds the city to the north at a distance of only a mile-and-a-half from the river. But the class of cities to which Montreal belongs is so very different from that of Toronto that the two places cannot be compared by the same standard of prosperity. Montreal, with its older foundation, has many disadvantages in the way of old and narrow streets, poor districts, such as Hochelaga and Griffintown, and then, as the great port of the Dominion, its quays, wharves, docks and canal-basins, and the accompanying store and ware houses, mills and houses for employés, render improvement, except by a very vast outlay of capital, difficult and almost impossible. Montreal can only spread itself out practically in one direction; namely, to the west, where Cote St. Antoine is a favorite suburb for private residences. As to the price of land in the two cities, that is not easily compared through real-estate reports unless the dimensions of the property sold are given, because in Montreal the price is so much per foot *superficial* of the whole surface, while in Toronto it is quoted per foot *frontage*. To speak of seventeen dollars a foot on St. James Street, Montreal, and four hundred dollars a foot on King Street, Toronto, is misleading to the uninitiated.

I note Messrs. James & James's letter in reference to the criticism on their plans for the Toronto Board of Trade Building in my letter of last month. I will only add, in conclusion of my allusions to the matter, that my remarks were made without any bias in my mind against them. I took the plans as they were before me, and made such criticism as they appeared to warrant.

ILLUSTRATIONS

[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

ENTRANCE TO THE YOUNG MEN'S CHRISTIAN ASSOCIATION BUILDING, ALBANY, N. Y. MESSRS. FULLER & WHEELER, ARCHITECTS, ALBANY, N. Y.

[Helio-chrome, issued only with the Imperial Edition.].

GOTHIC SPIRES AND TOWERS, PLATE 41. — ST. JAMES'S, LOUTH, ENGLAND.

[Issued only with the Imperial Edition.]

THE AGE OF FRANCIS I, PLATES 3 AND 4. — THE TOURNEY FIELD, CHAMBORD; THE GUARD-ROOM, CHAMBORD.

[Issued only with the Imperial Edition.]

PROPOSED HOTEL, KINGSVILLE, ONT. MESSRS. MASON & RICE, ARCHITECTS, DETROIT, MICH.

PROPOSED TWELFTH BAPTIST CHURCH, BOSTON, MASS. MR. EUGENE C. FISHER, ARCHITECT, BOSTON, MASS.

A FOUNTAIN. JATIVA, SPAIN.

HOUSE FOR CARROLL E. BOWEN, ESQ., ROCHESTER, N. Y. MR. THOMAS NOLAN, ARCHITECT, ROCHESTER, N. Y.

LONDON

THE SCHOLARSHIP PRIZE-WINNERS. — THE ARCHITECTURAL ASSOCIATION AND ITS FEATURES. — THE ADMIRALTY AND WAR OFFICE. — THE MONUMENT.

THE Exhibition of Students' Works submitted in competition for the various prizes, medals, etc., of the Royal Institute of British Architects was, I think, on the whole hardly equal to that of last year. Some prizes have been more stubbornly fought for, and others have brought out less talent, but this is always the case with these competitions. The "Pugin" student is Mr. C. E. Mallows, who worked, I understand, a good deal with Mr. Pennell, of *The Century* fame. His drawings indicate a thorough acquaintance with the pencil, and a knowledge which he uses to great advantage of the way to obtain striking contrasts of light and shade; an all important thing in a certain style of draughtmanship. He was run very close by several of the competitors. The "Glissell" medal was not awarded. Mr. Lanchester's charming color studies carried off the "Owen Jones" studentship. He exhibited the sketches which he made while travelling in Italy last year as "Aldwinckle" student, and it is a noteworthy fact that success in a minor travelling-studentship nearly always secures the winner a place in more important competitions, since he is able to spend the time that he uses in working out his studentship in preparing drawings for another. But this by the way, Mr. Lanchester's drawings are as good as any I have seen in the room for a long while.

The Tite Prize has produced nothing in quality equal to last year's competitions. Mr. Verity, son of the architect of the "Criterion," takes the prize for a pure and neat design in Italian Renaissance. The Institute Silver Medal for measured drawings was won by a Nottingham man, Mr. Allen, for drawings of Wollaton Hall, visited by the Architectural Association, last autumn, though Mr. Troup comes in a good second with some excellent drawings of St. John's College, Oxford. The "Soane" Medallion has proved *the* competition this year. Mr. Arthur Sykes was *primus inter pares* with a well-studied and careful design, with nothing very wonderful in it, but with everything very thoughtfully worked out. Mr. George Kenyon, who has studied in the Paris Ecole des Beaux-Arts, submitted a work in which the influence of his *alma mater* is strongly pronounced. There were one or two Gothic designs, as a warning to others, I suppose. The design of the exhibition was, however, one submitted under the title *España*. It is one of the most eccentric, extraordinary designs that can be imagined, but, at the same time, masterly and powerful, and striking in its originality. There is a Moorish feeling about the design, which the author emphasized by a really beautiful perspective drawing, with southern sky and Algerian surroundings. There was quite a storm in a teacup about this design. The judges, startled perhaps at its originality, passed it over. When their report, however, came to be read before the Institute, Professor Aitchison got up and moved that the judges' report be amended, and that *España* be awarded a Medal of Merit. He was backed up by Mr. Ewan Christian, a Past President, but their efforts were unavailing, as the Institute confirmed their Judging-Committee's report by the majority of five. This will serve to show you what interest this design has excited, and I dare say you will see it in one of the professional papers. The Godwin Bursary was awarded to Mr. Frank Stephen Grainger, M. A. These prizes, amounting as they do to over £250 per annum, are a great incentive to students to work here in England, and what I may venture to term your spirited action is founding a similar travelling-studentship for our fellow-students across the water has attracted notice here, and been warmly commended, though the breadth of your conditions, in opening your competition to students, "male or female, white, red or black," reads like a dry piece of humor. Nevertheless, let me promise the lucky man (or woman) a hearty welcome to the "ould countree," and we won't grumble even though she be a Pawnee squaw.

The latest move of our student body, the Architectural Association, has been hardly what you might term architectural. We have founded a Lyric Club under eminent patronage, and twice a month, under the soothing influence of the fragrant weed, offer up our devotions to the Muses. The Club has had an excellent effect in helping to bind together in the bonds of brotherhood the students at the Association of Architects. What a wonderful body this is, though I "say it as shouldn't." With past and present students, we have over one thousand names on our books. We carry on an illustrated journal and a sketch-book monthly. We have a Cycling Club, two companies in the Volunteers, and now a Lyric Club. We have representatives all over the country to aid the wandering student whilst sketching, and our classes, lectures, etc., are very numerous. Indeed, as you see, we are, excepting the Royal Institute of British Archi-

tects, the most powerful professional body in the kingdom, and, I am happy to say, disaffection is hardly known in our midst, and we loyally stand by the Institute through thick and thin, although, in times gone by, our relations with the powers that be have been well strained. Forgive this little outburst of enthusiasm, but it is difficult to avoid it when one gets on the subject of the Association.

The other night, our friend, Mr. Francis E. Masey, held forth on "London As It Is and As It Might Be," one of those purely theoretical subjects whose ventilation before an audience of architects seems quite superfluous. The lecturer proposed the appointment of a wholly impossible individual — a censor in art; upbraided architects for treating each façade *per se*, instead of in connection with its neighbors, and entered on the inevitable comparison with Paris. The discussion was of more interest than the lecture. It afforded Mr. Blashill, the Superintending Architect of the dying Board of Works, an opportunity of trotting out his pet idea of subjecting all our buildings to a perennial drenching with the fireman's hose, to clean off the dust and dirt that accumulates on them, and it enabled Mr. Bery to make a very energetic protest against the continual comparison of London with Paris. He said, and I quite agree with him, that the very incongruity of London produced a picturesqueness impossible of attainment in a modern Continental city, and that London contained features of interest — nay, beauty — peculiar to itself. I think the sensible remarks of Mr. Bery fitted-in with the prejudices of the meeting much better than the theories and sentimentalities of the lecturer.

Vacillation, vacillation! There is a rumor floating about that the Government has again abandoned its project about patching up the Admiralty and War Offices with the buildings I commented on severely in one of my former letters, and contemplate reverting to the original design of Messrs. Leeming & Leeming. Although it is uncomfortable to have a government that does not know its own mind, yet this time the pendulum has swung in the right direction, and I trust there is some solid foundation to the rumor.

The fears about the safety of the Monument, which I mentioned some months ago, have happily proved to be groundless. The erection has been very carefully tested from top to bottom by an eminent firm of contractors, under the superintendence of the City Architect, and has been found to be perfectly stable.

The fire demon has been busily at work again. His latest victim has been a beautiful county mansion in Wiltshire, which was erected some five or six years ago at a cost of £50,000 from Mr. Philip Webb's designs. The house was almost entirely destroyed, and a great quantity of beautiful carved oak and many very valuable works of art, including a large picture by Burne Jones, were all burned. Indeed, the total loss will not be much under £100,000. "The house was fitted with the latest patent fire-extinguishing appliances, but, owing to the cold weather, they would not act." — [*Daily Paper.*]

The elections to the London County Council have taken place, and, with the exception of five or six, all the members of the old Board of Works who sought the suffrage of the rate-payers were rejected at the polls. There is some talk of the new County Council building a new house for themselves on the Thames embankment. The probable chairman of the new body will be the Earl of Rosebery, K. S.

PARIS

THE COMING EXHIBITION. — INTERNATIONAL EXHIBITIONS, THEIR GENESIS AND HISTORY. — THE PRIX DE RECONNAISSANCE DES ARCHITECTES AMERICAINES.

MY next article will very likely be dated on the day of the opening of the Exhibition. The great question everywhere is this, Will it be ready? Those who are confident reply in the affirmative. Others maintain the contrary, either through a spirit of pessimism or of opposition, for there are, it must be acknowledged, many enemies of the enterprise, and these last cry out at the top of their lungs that it is very possible that on the day of opening there will be exhibited only unopened packing-cases and unfinished show-cases. These two ways of looking at things are evidently exaggerated. It is time to acknowledge the truth: no one must be deceived, and the lie must be given to those who have an interest in embarrassing the success of the Exhibition. Let us confess it, we are behind time; but I maintain, and I am in a position to know, since I am employed here amid the installations, this delay is not general, and particularly does not apply to the industrial sections; this is very important. All the galleries in these sections will be ready if the exhibitors think it worth while to arrive with their goods in time. They will have, as a matter-of-fact, two long months for their installations, which is certainly more than enough. Where delays are to be feared, particularly if the bad weather persists, is in the two palaces of the fine arts and liberal arts. Here there is surely no time to lose, for it will not be possible to begin the installations at a seasonable time because of the delays in the execution of the work — delays arising from several accidents which have brought about changes in the original plans. But, thanks to the activity displayed and the night-work, we shall get through all right in a fairly satisfactory way. People were able to convince themselves of this at the time of the visit of the President of the Republic on the 13th of January, a visit which produced a very good effect, since the public being invited were able to take account of the progress of the interior work, which they had not been able to inspect from outside the enclosure of the Exhibition Grounds.

And now, before speaking in my next article of the curiosities and distractions of the Exhibition of 1889, let us glance at its predecessors and the history of international exhibitions. From what epoch dates the first exhibition? A Greek historian of the second century (Athenæus) reports that under Ptolemy Philometer there was given a pompous display where this Pharaoh caused to be exhibited by the merchants of Thebes and Memphis everything which Egypt produced in the way of luxury. If this statement is exact, it would prove that there is "nothing new under the sun," and that the first national exhibition does not date from yesterday; but it is allowable not to accord too great confidence to these statements of the ancient historian; and I only mention the fact by way of curiosity, without attaching to it the least importance. It is only in the year VI of the Republic, in 1798, that there took place the first gathering like an industrial exhibition. It was the writer François Neufchateau, a member of the Academy, who, on the occasion of one of the public fêtes given by the Directory, had the idea of collecting and grouping together for the sake of comparison the products of French industry. This exhibition lasted for thirteen days, and 110 exhibitors took part. At night the lamps were lighted, and the number of visitors was great. Afterwards the Government encouraged these undertakings, which took place at several later dates and finally assumed a certain importance, thanks to the competition of the provinces and the colonies in proportion as these developed. But there came a time when the need made itself felt of comparing the different products of the nations, and gathering these together in a universal exhibition. The first of these dates only from 1851, and took place at London. Each country was represented there with its national characteristics. It was an enormous success, and all Europe passed through the Crystal Palace: but, curious and regretable to remark, the fine arts were absolutely unrepresented. The glory of France was upheld by 1750 exhibitors, who obtained a large number of recompenses.

The United States followed the example of England. But the universal exhibitions which are truly memorable are those which took place in Paris in 1855, 1867 and 1878. The Exposition of 1855 was decided by a decree of Napoleon III, dated March 8, 1853. It was not merely an industrial exhibition like that at London; for by a second decree, dated June 22, 1853, which declares that the perfecting of the industries is intimately connected with the fine arts, a section of painting, sculpture, engraving and architecture was especially organized. A general commission, placed under the presidency of Prince Napoleon, was arranged and divided into two subcommissions, one having charge of Industry and the other of the Arts. Among the names of the commissioners of Fine Arts we find the names of the celebrated artists Eugene Delacroix, Ingres, Henriquel-Dupont, Merimée and Visconti. The general commission decided that in the interest of industrial art and the visitors, the Exposition should be a place of sale. They decided likewise, and this was an innovation, that the visitors should pay an entrance-fee. This rate varied, according to the day and the season, from twenty centimes and one franc to five francs on Friday, from the 16th to the 31st of July, and two francs from the 1st to the 9th of November. All this was complicated enough. The visitors turned into the treasury in this way a total of 3,302,484 francs for the Department of Fine Arts, and 2,506,194 francs for the Department of Industries. The Exhibition took place in the Palais de l'Industrie, which at this time was connected with the panorama of the Champs Elysées. Besides, it stretched through other galleries fully to the Quai de Billy and the Avenue Dantin for the Department of Industries, and the Avenue Montaigne for the Fine Arts, and the number of exhibitors was about 23,950. At the Exhibition of 1867 which remains a triumph for France, there were 52,000 exhibitors, and it was visited by 30,000,000 of people.

It is easy to recall the general plan, attributed to Prince Napoleon. It was composed of a central garden surrounded by seven rows of concentric galleries, which formed an immense ellipse, cut transversely by sixteen streets, each known by the name of some country. One of the successes of this exhibition was the gallery of the History of Labor, where machines in motion showed the transformation of primal matter. For the first time, also, a large space was devoted to social studies and to examination into the methods of education and instruction.

In 1878, France, hardly recovered from the disasters of 1870 and and 1871, summoned Europe and the entire world to a grand exhibition, showing thus her vitality and her energy. The general disposition is still present to the memory, and we all recall the success and animation of the Street of Nations, where each country was represented by a typical piece of national architecture. We recall also that it was in connection with the Exhibition that the Palace of

the Trocadéro was built, and that there was transformed into gardens, terraces and cascades all of the hillside which extended from the Pont de Jena to the Quarters of Passy and the Arc de Triomphe.

In 1878 the exhibitors numbered 52,800. Paris entertained more than 40,000,000 of visitors. They accused the Exhibition of 1878 of one defect, however, which certainly cannot be laid to the charge of the coming Exhibition. It was not a lively affair. Places of pleasure were distributed too promiscuously and strangled by the larger buildings. The Exhibition itself was closed at night, even the parks and gardens. This year they have, on the other hand, sacrificed the regular buildings of the Exhibition, that is to say, the industrial galleries, to those which are scattered through the gardens. These assume a great importance, and at night will present a fairy-like aspect. Also in spite of the larger area, which is really occupied, the exhibitors will only number about 42,000. Of the eighty-four hectares which the enclosure of the Exhibition contains, only twenty-nine will be covered with buildings.

I have already spoken of the general organization and of the direction entrusted to the three directors general, M. Alphand for the works, M. Berger for the exploitation and installation, and M. Grison for the finances. I will add to this the information contained in the third article of the rule regulating entrances: "The right of entry to the Exhibition shall be fixed in the following manner: By day one franc for each person at the hours of general entrance; two francs per person during the hours devoted to study; at night, two francs per person for week days and one franc on Sunday; season tickets 100 francs each for the whole duration of the Exhibition; twenty-six francs for subscription-cards delivered to the members of the commission and committees of the Exhibition. A weekly bulletin will be published in the official journal, and posted everywhere it may be necessary, which will inform the public of the hour of opening and closing the departments belonging to the Exhibition. The same method will announce the hours particularly devoted to study and distinguished from the public hours." And now let fine weather and sunlight illumine and enliven the day of opening.

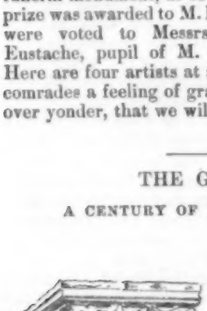
I must not forget before finishing this letter to speak of the first competition which has just been held at the School of Fine Arts for the *Prix de Reconnaissance des Architectes Americaines*. There is no call for again mentioning the effect which this gift, so delicate and so ample, produced here, and which every year must recall to us and tighten the bonds of comradeship which distance cannot break. The subject of the competition was a monument symbolic of artistic fraternity. According to the programme it must present a temple or a triumphal edifice dedicated to Art, placed above a sub-basement, and so raised as to dominate the whole composition, accompanied by porticos, galleries, open staircases, etc. Nine contestants took part in the competition, which was extremely interesting. It was, however, rather difficult to avoid the appearance of a funeral monument, as several contestants found to their cost. The prize was awarded to M. Huguet, pupil of M. Blondel; and "*mentions*" were voted to Messrs. Adolphe Henry, pupil of M. Guadet; Eustache, pupil of M. Ginain; and Jankel, pupil of M. André. Here are four artists at any rate who should owe to their American comrades a feeling of gratitude; and you know very well, you fellows over yonder, that we will always join our good wishes to theirs.

M. Brincourt.

THE GROSVENOR GALLERY.

A CENTURY OF BRITISH ART; FROM 1737 TO 1837.

London, January 21, 1889.



TO-DAY this exhibition opens to the public with a second series of pictures painted within the above dates. Sir Coutts Lindsay and the management may be congratulated on having secured a thoroughly representative collection of a magnificent period, many of which have never been exhibited before, and nearly all of high artistic interest. It worthily sustains the reputation of the Grosvenor, and, for weeks to come, will attract all the artistic world. The pictures are hung with great judgment, each room having a special interest of its own.

Every one knows the two large galleries and the two small ones of the Grosvenor in Bond Street.

To begin with, the largest and "West Gallery," where, as usual, most of the gems were collected.

Mrs. Jordan's large portrait, by Romney, stands out, sweetly gazing into the rooms from a park, dressed in a simple white muslin, cut half-low, with elbow-sleeves and a pink sash. The fair hair, waving round the face and neck, is surmounted by a small white cap. It is a happy, delicate young face and slender figure, painted evidently in the heyday of Mrs. Jordan's life and beauty — before the shadows came, and she was repudiated and forgotten.

Romney was a charming painter of women's faces. He caught their soft witchery and smile, which make his portraits irresistible. Note his many portraits of Lady Hamilton, whom he worked up in every sort of fancy and attitude. It is said that for years he was never completely happy except when she was posing before him.

No. 7 is his Lady Hamilton as "Miranda." She looks like the laughing genius of a storm, with her head thrown back, her red auburn hair waving in disorder, and her bare right arm raised. This lovely creature, who took captive so many hearts, was the daughter of a common housemaid, almost destitute and uneducated. She first became known to the public through a quack doctor, who exhibited her as the "Goddess of Health." Sir William Hamilton, ambassador at Naples, married her. She became the favorite of society there, and, as every one knows, was the love of Nelson's whole life. Whence came her subtle charm? — with that innocent mouth and radiant expression?

Romney has a portrait of himself, No. 81, as a young man — so realistic that he might have belonged to this period, and painted it yesterday. He is in a slate-gray coat and white cravat, holding his chin with one hand, and lost in thought.

George Moreland has no less than twelve pictures here, all sunny and full of out-door life and movement. Who would think the best of them had been painted in King's Bench Prison, where he was constantly incarcerated for debt, and only painted his way out for short intervals.

His "Lost Kite," No. 1 of the catalogue, has become entangled in the upper branches of an oak. Note the *tree*, so strong and branched, while the new kite is so transparent and fragile that you long to help the unhappy urchins below to rescue it uninjured.

His Nos. 28 and 30 are called "Partridge Shooting." They seem to plant you in a stubble-field at once, and keep you on the *qui vive*, gun in hand. Then his two pictures of girls, one called "The Surprise," the other "The Billet-doux." The brilliancy of the scarlets, and blues, and greens in their draperies is wonderful. These are the very pictures that come out so well in mezzotint, and are now fashionable got up in little old-fashioned frames of white and gold.

Another of his, No. 61 — "A Summer Afternoon" — in which a farmer and his wife sit lazily beneath a "moreland tree," while their children play on the grass with a dog.

Perhaps the best of all is a lovely group, which he calls "A Happy Family," No. 87, a mother with her three children in a garden, who gather flowers for her, and which she seems to explain to them botanically.

Sir Joshua is here, of course, in No. 3, "Lady Elizabeth Keppel" (one of the famous portraits from the collection of Lord Albemarle), a conventional-looking lady in conventional dress of white, with white lace fichu and pearl ornaments, which have all faded and blended away together into a delicious cream-color. (The painting of the hands in this picture seems greatly scamped.)

His portrait of Mrs. Morris, No. 5, has great delicacy of touch and color. Many other portraits of his are shown. Among the most remarkable, one of Laurence Sterne (author of "*Tristam Shandy*," "*Sentimental Journey*," etc.) It is a very large picture, and well known as the one oft-quoted by the phrenologists, who say that, in sitting down and resting his elbow on the table, Sterne involuntarily placed his forefinger to his forehead on the very bump which was the sovereign point of his character.

Sir Joshua has also a fine picture of a "Child Crossing a Brook." A sturdy little maiden, about ten years old, barefoot in a stream, clasping round the body a shaggy and reluctant terrier; she wears a blue gown over a yellow petticoat. These colors, as well as the reds of the flesh tints, are much faded away, but the *real* child and the *real* dog are left.

Hogarth has a scene from the "Beggar's Opera," the colors quite as good as ever. The picture is in its original frame, with a carved head of Hogarth himself on the top of it. Hogarth has two others of very conscientious work in No. 102 and 103, "The Thornhill Family" and "The Punch-Bowl," both being strong contrasts of humor. One cannot help smiling at the exceedingly proper Thornhill family assembled to tea in their oak-panelled room; they look like a family of starched old maids and prim old bachelors, doing what they consider the correct thing, but are only too evidently thoroughly bored with each other. Tea is being poured out into exquisite Nankin blue cups, and handed round by the youngest bachelor, but no one seems either "cheered or inebriated." Hogarth, I believe, eloped with the eldest Miss Thornhill. In "The Punch-Bowl" ten men are carousing in a tavern. In the centre of the table is a large bowl of punch, which is being served out with a ladle. One man has fallen prone on the floor, and another seems very likely to follow him. It is the juxtaposition of these two pictures that brings out all the fun in them.

"Manlius thrown from the Rock," by Etty, No. 107, is the back view of a nude, foreshortened male figure, sliding downwards from a broken cliff of rock — an ambitious figure to have painted, and in better color than most of Etty's. So strong is the drawing you feel giddy to look at it.

Sir Thomas Lawrence has a very fine, full-length portrait of Lord Castlereagh, in whose refined, sad face one tries to find a clue to his inexplicable suicide.

Turner has two pictures — one of terrific grandeur, "The Avalanche," and another a peaceful idyllic scene on the Thames, with a view of "Pope's Villa."

In "The Avalanche" we have all those magnificent natural and atmospheric effects of which Turner was so great a master; while "Pope's Villa" is a contrast of a serene, glowing, sunlit sky, green trees and soft distances.

Sir David Wilkie's "Blind Man's Buff" seems still being played as merrily as it was a century ago, while in his "Penny Wedding" the bride, the bridegroom and bridesmaid are still dancing on.

John Cotman's "Homeward Bound" is a notable picture of a great three-masted vessel in full sail, surging towards us through the green water, while the sun has just set in broad bands of crimson and gold across the yellow sky.

One of the small rooms is devoted to Constable with a glass-case containing his relics. His color-box and palette, and even some little lace shirts and caps he wore as a baby. His work as a painter was sketchy but vigorous; he used a great deal of black in his brush, and laid on heavily. His admirers consider him the greatest painter of natural landscape.

Another room was devoted to pastel portraits, many of which I heard Mr. Pennell and other artists loudly admiring; but, to me as an unprofessional critic, they looked cold, glaring, blue and crude.

ARCHITECTURAL EVOLUTION.[1] — II.

Tower of the Cathedral Nimes

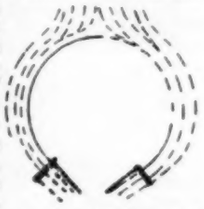
IT is time, however, to notice that important feature which had more to do than any other with the change in the character of architecture. The arch is one of the earliest forms of construction, and is coeval with the pyramids; it is found there in the rudest construction, but, nevertheless, perfectly adapted to its uses. The pointed and semicircular arches are alike met with, but they are only used constructively. It was not till Roman days that it was brought into prominence as a feature of architecture.

The object of the arch is, in the first place, similar to that of the lintel — to arrest the downward pressure of a superincumbent weight, that the material beneath may be omitted and an opening be formed. But the arch had a higher and more responsible duty to perform — a lintel merely arrests the pressure and bears the whole of the weight, the arch distributes it. In later days, when radiating joints were employed, an additional function was given to the arch, that of *directing* the pressure into certain channels. Radiating joints were for centuries unknown, and the arches were formed of stones raised in two piers, each stone as the piers rose projecting beyond the face of the one below it, in the direction of the other pier, until these projecting stones so nearly met that a single stone closed the intervening space and formed the apex of the arch. The distribution of weight was effected often in a still ruder manner. Two stones placed on end inclined towards each other and touching at the upper ends, have, in many instances and in many ages, done duty for the arch. The Greeks required no arch in the construction of their orders, their columns were placed so near together that the horizontal entablature required no additional support. But, the Romans, as I have remarked, put their piers so far apart that the heavy cornice running between them must, of necessity, have support: a pier in the centre would not do, and they wisely made use of the arch. Bringing it out from the obscurity of tombs and merely constructional purposes, they set it in the light of day, constructed it of dressed stone and made it an object of untold usefulness. Hitherto it had been but a piece of "construction," now it was to be "ornamental construction," and was to take its place as a feature in the art. This utilization of the arch as a feature was to alter the whole style of architecture, and this early date may be said to be the dividing line between the distinctive characteristics of Classic and Gothic architecture, and all that preceded the one and followed, and will follow, the other. The horizontality of the one was to give place to the verticality of the other. Heathenism was to make way for Christianity. The arch was to take the place of the beam or lintel, and the vault — the lateral continuation of the arch — the place of the flat roof; nor was this all. I have alluded to three of the functions of the arch — that of *arresting* the downward pressure of the wall above it, that of *distributing* it and that of *directing* it into particular defined channels; but, it was to do something more than this, it was to *collect* pressures from various points, and then take them into the required channels.

Mr. Ruskin has a very poetic idea as to the origin of the arch. He says in his "*Stones of Venice*": "Let us watch the sun for a moment as it climbs: when it is a quarter up, it will give us the arch *a*, when it is half up *b*, and when three-quarters up *c*. There will be an infinite number of arches between these, but we will take these as sufficient representatives of all. Then *a* is the low arch, *b* the central or pure arch, *c* the high arch, and the rays of the sun would have drawn for us their voussoirs." He goes on to say, "The central and last group are the most important. The central round, or semicircle, is the Roman, the Byzantine and Norman Arch." "The Horseshoe round is the Arabic and Moorish Arch and its relative pointed, includes the whole range of Arabic and Lancet, or Early English and French Gothics. I mean of course by the relative pointed, the entire group of which the equilateral arch is the representative." I have not sufficient presumption to attempt to overthrow the theories of so great a man as John Ruskin, who has a wonderful insight into the intricacies of art and of the meanings of the various parts and to whom we all owe the greatest respect.

Perhaps there is no one of the present day who loves art more dearly, than he, — who sees its divine origin more clearly, or who has by his lectures and writings done more to instill into the minds of hearers and readers a higher sense of the duties of those who would be expounders of the teachings of art. It is a matter of small moment to my readers that I have not yet been converted to the theory Mr. Ruskin holds about the origin of the pointed arch or the truth and beauty of the Arabic or horseshoe arch. I do not dispute that the idea of the semi-circular arch may have arisen from the rising or setting sun, for the Egyptians were great sun worshippers and must have been struck with the beauty of the circle and its parts. But I venture to think that they would have used the low and the high arch as much as the "central" or semi-circular, had they thought of it, but that they did not, is proved by the fact, that the pointed arch was in the first instance only used in the rudest form, very occasionally, as if by accident rather than design. Their very method of constructing the arch with horizontal beds may have been the accidental means of the discovery of the pointed, but, when discovered, they made no particular use of it. Had they done so, where would have been the "Classic" architecture?

In their heathenism they had not sufficient enlightenment to strive after verticality, and, therefore, they could not grasp the idea of the arch at all as being worthy of display, and I think we must look to construction as the origin of the pointed, and this investigation I must leave for the present. The Arabic or horseshoe arch is not a true arch, *i. e.*, an arch in which every particle has its particular work to do, and no part of which is idle. It is a piece of "*constructed ornament*," not "*ornamental construction*." The continuation of the curve below the springer line is utterly useless for the work of the arch, and never could be of use unless the supporting piers had been placed as shown in the diagram, so as to carry on the pressure in the same direction, which would have been absurd.



With the piers vertical, the thrust must have gone down in the usual direction, and reached the caps of the piers in a vertical direction, and, doing so, this inward projection is useless. It simply adds to the weight the pillars or piers have already to bear, and may be classed among the useless ornamentations that are indulged in by those who are ignorant of the true spirit of architecture.

For many centuries after the Romans brought the arch to light horizontal wood-ceilings were used, and they continued to be used here and there at the same time as vaulted roofs.

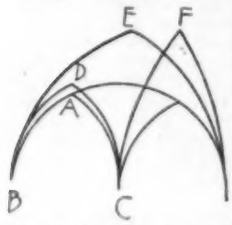
The dome is the earliest development of the arch for roofing purposes, and it is the roofing problems that resulted in the introduction of the pointed arch. Circular buildings, or even buildings square on plan, were roofed over with a dome, and then those whose naves were made up of a succession of squares were roofed with a succession of domes. The attempt was made to make the one covering to the nave do for "ceiling" and roof, but the height that was sufficient for the interior dome was always found too stunted for the exterior, and the stone roof was finally used as a "ceiling" only, while a wooden roof was erected outside this to throw off the water and protect the stone vaulting.

The barrel or tunnel is another method, and a very simple one, of roofing over a nave, and there are many examples extant. It consists of an arch like a tunnel, extending from one end to the other of the church. But I must say something here about the plans of the churches, or else the difficulties to be overcome in the roofing question will not be easily understood. The churches were transformed basilicas, and the basilicas were the Roman business buildings. They consisted of nave and aisles — oblong — and one end terminated in an apse. In the apse were the magistrates' seats, and in front of them the altar. Very little change was required to make the building suitable for the Christian worship. The seats of the magistrates were removed, and the altar placed nearer the wall they had been against. The apse was railed in, and finally a choir was formed, which, raised about three feet above the floor of the rest of the church, became the chancel arrangement of the present day. High up in the nave walls, above the aisle roof, were small windows. There was no triforium, but the space usually occupied by a triforium was here used for decorative purposes. In the sunny south fewer and smaller apertures were required for the admission of light than in more northern climates. It was rather an object to exclude the brilliant daylight, but, as churches were erected farther north, more light was demanded. But hitherto the plan of each section or bay of a cathedral had been square, and the spring of the tunnel-vault came down very low upon the walls, so that there was little space for windows. When the domed roof was used the walls were higher, for the dome rested on the top of four arches of equal height. Had the two systems been combined, the greater part of the tunnel-vault would have been cut away, and still the difficulties would not have been solved. An attempt was made to obtain the

[1] Continued from page 283, No. 677.

required height for the windows by lengthening the bay and introducing a kind of intermediate shaft, which supported a round arch across the nave, on which rested the crown of the vault. But this was contrary to the principle of vaulting, for vaults have to hold *themselves* up. However, this was a step in the right direction, as it proved, and it turned out to be the key of the solution of the difficulty. The intermediate pier was made into an ordinary pier, so that on plan the nave section became a parallelogram across, instead of lengthwise of the church, two of these parallelograms occupying the space of the former square; then, by the introduction of pointed arches over the spaces thus arranged, the object was gained. Mr. Fergusson has a diagram which expresses this perfectly. I will quote him:

"In spite of all the ingenuity bestowed upon it [this intermediate pier] in Germany, France, and England in the eleventh and beginning of the twelfth centuries, it never produced an entirely satisfactory effect until, at last, the pointed arch came to the rescue. It is easy to see how the pointed arch obviated the difficulty: Supposing the great vault to remain circular, two segments of the same circle, *AB* and *AC*, carry the intersecting vault nearly to the height of the transverse one, or it could be easily carried to the same height as at *D*. When both were pointed, as at *E* and *F*, it was easy to make their relative heights anything the architects chose without either forcing or introducing any disagreeable curves. By this means the compartments of the vaults of the central nave were made the same width as those of the side-aisles, whatever their span might be, and every bay was a complete design in itself."



By this arrangement the arches of the vault *collected* all the weight and conducted it to the four piers, leaving the walls free of weight, and taking away from them every function but that of a screen or "wall-veil," as Mr. Ruskin calls it. To meet the thrust of the vaults, buttresses were built of great strength, but with such ingenuity that the bulk of material was reduced, until every particle not actively engaged in the work of support was removed. It was found that the addition of ornamental features would, from their disposition take the place, as far as the work to be performed was concerned, of some of the massive masonry of the buttresses, and hence pinnacles were introduced, which, by their weight, assisted in the resistance to the outward thrusting of the vaults. As the wall was little more than a screen, there was no limit to the size of the windows. The whole space between the piers could be removed, except for the necessity of a little lateral support to the piers, without weakening the structure. Large windows, then, being easy to obtain, were speedily executed, and colored glass put into them. The colored glass in the windows partly obviated the necessity for color on the walls, but carving, the decoration that had hitherto been painted on the walls, gave a better play of light and shade. As it happened, the lighter the wall-screen was, the better, as it had nothing to do with the support of the roof. The newly-carved wall-space between the sills of the clerestory windows and the top of the nave-arches was wide and heavy, and windows here would be impossible, as the other side of the wall was covered with a roof. But there was no reason why the wall should not be pierced, but rather the contrary. It had been pierced in earlier days to admit light to the nave, but this was not found to be a success artistically or constructionally, and was abandoned, but here piercing was not only desirable, but easily executed, and in effect nothing could have been more beautiful.

In some cases the aisle-roof has been raised and windows cut in the outer wall, but wherever this is the case it gives the appearance of weakness, and entirely removes the repose gained by this belt of arching round the church, with its dark, mysterious background. There is another form of arch which Mr. Ruskin holds in contempt; namely, the four-centred. The reason for its discovery or evolution was not so much *construction* as *ornamentation*, but as it is not *ornament constructed* for its own sake, but rather ornament arising from a desire to decorate the vaults, and in its arrangement principles of construction are observed, it is, perhaps, not fair to condemn it utterly. The effect produced is certainly beautiful, but it heralded the decline of architecture, and, when the form was made use of for windows and doors, a mischief was done that it is impossible not to regret. The "perpendicular" fan-vaulting is the immediate result of discontent and deviation from perfect truth. When the vaulting problem was solved, the execution of it was correct and perfect. It was a grand example of the art: simplicity, truth, and dignity and repose were the visible characteristics, and that which was visible on the surface pervaded the whole structure. But, not satisfied with this, the architects, imbued with notions of change, *forced* the idea, so to speak, and fell into error, a want of truth, and, therefore, not true art. It grieves me personally to recall that a few years ago I was of the opinion that fan-vaulting was the climax of the art and science, and that I have written to that effect, but further study of the matter has given me a different opinion of it, as I have set forth to be the correct state of the case above.

The forms of the ornamentation of architecture are of two kinds, painted and cut, and they are both essential parts of architecture. In the earliest specimens examples of decoration are to be seen, and it stands to reason that it should be so. It is far more natural that buildings should be ornamented in color than that they should be plain. Color, or light and shade, exists in everything, and "architecture" is not architecture without it any more than Nature would be Nature without color. Color need not always be laid on as with the brush. It may be sufficient to use materials of different colors, such as stone and marble in combination or stained-glass, which will throw colored light onto the work. Profuse carving sometimes has been more used than color, but even here there is color in the lights and shades. A perfectly flat surface in Nature is hardly to be found, but anything approximating to it, wherever it occurs, is always relieved from the monotony of one color by light and shade and color.

A green field does not exhibit a uniform green. It is varied with numerous shades, and dotted with simple wild flowers. The dead level of still water reflects on its surface every color around, and the precipitous face of the cliff, however smooth, shows endless shades and colors as the weather has acted on its composition. A bare rock standing out of the earth does not long remain one color. It is soon covered with lichen, which, itself, becomes soil for the plant, and at last even a tree grows upon it. Nature is not satisfied with improving herself, but directly she gets a chance she improves on the works of men. Take a mining district, and note the heaps of waste, "piled mountains high," which have so disfigured and changed the face of the country round, and made it look poverty-stricken, desolate, and God-forsaken: as soon as man has ceased to pile up the rubbish she takes possession, and, wherever possible, some seed takes root, and a few years of her undisputed reign cover the mounds with vegetation. A stone or brick wall soon loses its brand-new appearance, and "tones down," as we say, and is mellowed and made to harmonize with the coloring of Nature. So then love of color is a natural characteristic of man: his surroundings and every association of his life have color in them. Color is, itself, evolutionary. The secondaries evolved from the primaries, the tertiaries from the secondaries, and so on; the chief color of Nature being not a primary, but a secondary. The rock-cut tombs of Egypt were elaborately decorated with hieroglyphics, as I have said, and at every age buildings have been more or less colored.

Between 2000 and 3000 years B. C., the Chaldeans who erected their temples in seven stories and dedicated them to the seven planets, colored each story with the color dedicated to, or symbolic of them: 1. Saturn, black. 2. Jupiter, orange. 3. Mars, red. 4. Sun, yellow. 5. Venus, green. 6. Mercury, blue. 7. Moon, white. Fragments of colored work, plastered walls, etc., have come down to us from very early times, and in the earliest works of Christian architecture may still be seen the faint remains of such coloring on walls, ceilings, pillars, piers and arch-moulds. The form of the part to be decorated had, of course, a great deal to do with its treatment, and laws must be respected in coloring as in everything else. Plain surfaces need as careful consideration in reference to the whole building as the rounds and hollows of moulded parts; and, if the matter is gone into in detail, it will be found that every color has its proper place. The zigzag is the earliest form of ornamentation, a very primitive one and of very simple origin; a series of nicks with a sharp instrument, along the edge of a projection, is the forerunner of all cut ornament. These nicks or indentations widened and placed close together form the zigzag, which is to be found in the works of all nations. This form proved to be a particular favorite of the Normans, who adhered to it for so long, that it became one of the distinctive features of the style. The single zigzag gave rise to the double zigzag, and that to the lozenge, the varieties of each and their combinations.

But the truest forms of architectural decoration are those whose origins are from Nature, natural plants and foliage, and of these are to be found in early examples such plants and flowers as the lotus, which is a characteristic form of Egyptian ornamentation; lotus and palms belong to Assyrian; almonds, lilies, etc., to Phœnician art. Later we come to the Greeks and find the so-called acanthus leaf, the honeysuckle, lily, holly and others, until, in the perfection of English Gothic, the leaves of all English plants are introduced into the carving, grape-vines, maple, rose, ivy, thorn, burdock, oak and so on. These carvings are very seldom colored, the true undisguised material, the richness of the carving, the deep undercutting making it like lacework, and giving a dark, deep background to throw it up. The color of the stone and the introduction of marble in combination with it, as the yellow sandstone and purple marble at Lincoln, with the light through stained-windows, was sufficient to produce the richest effect.

In the "*Grammar of Ornament*" we find the following notes, which we should do well to remember, as well as others which I shall not quote, on the rules of coloring: "Color is used to assist in the development of form, also to assist light and shade." "These objects are best attained by the use of primary colors on small surfaces, and in small quantities balanced and supported by the secondary and tertiary colors on the large masses." "The primary colors should be used on the upper portions of the objects, and the secondaries and tertiaries on the lower." "In using primary colors on moulded surfaces, we should place blue, which retires on the concave surfaces; yellow, which advances on the convex, and red, the intermediate color on the undersides, separating the colors by white on various planes."

The development of statuary is easily traced, from the wooden idol, representing in the rudest form the imagined attributes of a

wrathful deity, to the exquisite perfection of the statuary of our day copied from Nature. On festal occasions the idol would be covered with colored garments; much as the images in Roman Catholic churches are arrayed now on the feast days of the saints they are intended to represent. Later these garments were replaced by metal beaten onto the surface, and then the hollow metal would be the figure; the wooden figure being no longer used. The idea of a figure as a kernel inside gave rise to casting, a thin coat of liquid metal being run over the shaped core; the core taken out the thin metal would hardly stand of itself, and the next operation would be the casting of a figure with a sufficient quantity of metal to stand alone, but still hollow. The cutting of figures in marble soon followed, and the nude human form, as the highest type of beautiful creation, was naturally the example taken for the highest of arts.

In the works of the past, the ancients carried out certain rules to the letter; they were not aware that they were following rules but felt what should be, and they executed it, but not without a struggle: as I have said, in their simplicity they adapted surrounding objects to the ornamentation of their buildings. The art or science of dyeing is much older than painting, and a thorough knowledge of colors existed before painting was much practised. Basing their colors on natural objects, they always spoke of the shades as having reference to particular objects as apple or seagreen, etc. They obtained their greens and many other colors from the vegetable kingdom, and their purples from products of the sea.

Having obtained colors, they soon found forms by means of which they could display them together for the decoration of their buildings. The every-day occupation of sewing has had the greatest influence on the evolution of the art; a seam is a joint in stuffs; an ornamental seam is ornamental construction, and a simple knot of thread is a very important feature; it became a couple of twisted serpents, and is found in this form as a religious symbol in every country. Silk was the foundation of the ornament of the Middle Ages, as wool, flax, linen, etc., were of the ornament of antiquity. The sacred tree-pattern of the Assyrians, derived from plaiting and knitting, has constantly been used for the decoration of walls.

Sewing had an influence on the art, as I have said, and embroidery had a far greater influence; it is the "prototype of all mural decoration." There are two known kinds of ancient embroidery — "*opus plumarium*" and "*opus phrygionum*"; the first is the earliest kind, and consists of colored threads laid over a groundwork, in parallel rows, and this allows of great freedom of treatment; the second is cross-stitch on canvas, the nature of the canvas necessitates the formation of squares, as the stitching followed the pattern of the canvas; and we find examples of decorative work consisting of squares covering large surfaces of walls.

The rules by which the ancients unwittingly worked have been well expressed by various authors, two of whom of very different dates and of very different feelings on the subject of architecture, I will, in conclusion, quote. Vitruvius says: "The perfection of all works depends upon their fitness to answer the end proposed;" and A. W. Pugin: "Every ornament, to deserve that name, must possess an appropriate meaning and be introduced with an intelligent purpose, and on reasonable grounds. The symbolic association of each ornament must be understood and considered, otherwise things beautiful in themselves will be rendered absurd by their application."

R. W. GAMBIER-BOUSFIELD, A. R. I. B. A.

BUILDING LAW.

THE RESPONSIBILITY OF AN ARCHITECT — INADEQUATE CHIMNEY FLUES.

THE case of Hubert *v.* Aitkin recently decided in the Court of Common Pleas of New York City and referred to editorially in the *American Architect* for February 9, has, we learn, been set down for re-argument. According to the original decision the architect was to pay one thousand dollars on account of the deficiency of the chimney-flue for an apartment-house, it being claimed and the Court deciding that the chimney was inadequate for the service of the boiler and that the proper consumption of coal could not be secured. The architect is said to have relied upon the judgment of the steam-heating contractor.

There is no novel question of law involved in this case, as the legal principles applicable to such matters are well-understood. The architect in undertaking to design an apartment-house of course holds himself out as capable of drawing the chimney-flues of such dimensions as, taking all the elements of the problem into account, would generally be considered proper and suitable construction for the purpose. He cannot shelter himself behind the opinion of the contractor who does the work, but must be prepared to fortify his case by showing that the construction would meet with the general approval of the profession. The general purpose of the building is to be taken into account, and, as pointed out in the comments of February 9, it certainly would not be appropriate to design for a city apartment-house a chimney such as would be used for a factory where the space occupied by the chimney and the appearance of it would be matters of no consequence.

The only real question in the case is one of fact, viz.: whether the chimney flue in this particular case was such as would commonly be considered in the profession proper for the purpose intended; and the main interest attaching to the case grows out of the natural suspicion that the owner has really got the kind of chimney that he ought to have and is simply trying to cut down the architect's fees.

BACK-BAY RESTRICTIONS — PORCHES AND PORTICOS — THE SPIRITUAL TEMPLE.

THE case of the Spiritual Temple, which has attracted the attention of architects and the public, has at length been decided by the Supreme Court of the Commonwealth of Massachusetts.

As many of our readers are aware, the Spiritual Temple is situated on the corner of Exeter and Newbury Streets in Boston, and was built from plans of Messrs. Hartwell & Richardson in the year 1883.

The controversy arose under the following clause in the deeds from the Commonwealth, under which both parties to the controversy claimed:

"The front wall thereof on Newbury Street shall be set back 22 feet from said Newbury Street, provided that steps, windows, porticos, and other usual projections appurtenant to said front wall are to be allowed in the reserved space of twenty-two feet, subject to the following limitations; namely, First, that no projection of any kind (other than door-steps and balustrades connected therewith, and also cornices at the roof of said building) shall be allowed to extend more than five feet from said front wall into said space; and Second, that no projection in the nature of a bay-window, circular or octagon front, with the foundation wall sustaining the same (such foundation wall being a projection of the front wall) will be allowed unless any horizontal section of such projection would fall within the external line of a trapezoid whose base upon the rear line of aforesaid space does not extend seven-tenths of a full front of the building, nor exceeding eighteen feet in any one case, and whose side line makes an angle of forty-five degrees with the base."

At the Northwest corner of the building on Newbury Street a stone porch was built, fifteen feet high, with steep slate roof seven feet high and with solid side walls projecting at right angles to the front wall of the building into the reserved space. The porch was closed in front by an iron gate and projected into the reserved space substantially five feet, though the three lower courses went some three inches beyond the limit.

The action was brought by the Attorney General at the instance of the adjoining owner, whose view and light, in respect to the lower story of his house, were seriously interfered with by the porch.

It was contended by the Commonwealth that the structure in question was technically a porch rather than a portico; that there was no such thing as a portico with closed sides; that the structure in question could not be called a usual projection; and that this particular porch was a projection in the nature of a bay-window. The defendant on the other hand contended that there was technically no difference between porticos and porches; that a porch with closed sides was as much a portico as if it had consisted simply of a roof supported by columns; that projections of this kind were usual in the city of Boston at the time of the execution of the deed; and that such a porch was not a projection in the nature of a bay window, and therefore need not fall within the trapezoid mentioned in the deed.

The Court decided all these questions in favor of the defendant and disregarded the trivial violation of the restrictions in the projection of the lower courses of the porch.

The principal architectural contention in the case, so to speak, was whether the word portico as used in the deeds was intended to include such a structure as this porch with solid sides extended perpendicularly to the main line of the building. The evidence on these points covers one hundred and sixteen printed pages. One builder, one surveyor and two architects testified that such projections were unusual in the city of Boston; and the two architects also gave it as their professional opinion that the structure in question was not a portico by reason of the sides being closed. On the other hand the authority of Ferguson, Viollet-le-Duc, and Parker's "*Glossary*" were invoked to show that in common usage the words portico and porch were interchangeable; and Mr. Hartwell, the architect of the building, and Mr. Henry Van Brunt both testified to the same effect. Upon the question whether such a porch was a "usual" projection, the porches on the following churches in Boston were shown to be undistinguishable in respect to the distinctions made by the witnesses for the plaintiff from the porch on the Spiritual Temple; viz., The Second Church, Boylston Street, the church on Berkeley and Newbury Streets, Ferdinand Street Church, Charles Street Church, Old South, Milk Street, Bowdoin Square Church, church on West Springfield Street, Catholic Church on Washington Street, Swedenborgian Church on Bowdoin Street, School Street Church on Columbus Avenue, church on corner of Marlborough and Berkeley Streets, Peoples' Church on corner of Berkeley Street and Columbus Avenue.

The following were also referred to as differing from the porch in question only in having windows in the sides. Hollis Street Church, Emmanuel Church on Newbury Street, Union Church and Temple Street Church.

The porches of various secular buildings were also referred to, among others those of the Mechanics Fair Building, the Art Club on

Newbury Street, the Institute of Technology, a number of apartment-houses, hotels and private houses, and the Algonquin Club.

The conclusion to be drawn from this case is that although the porch in question is as serious a damage to the adjoining owner as a bay-window of similar shape and height would be, and although probably if the parties had thought of the matter at the time the deeds were executed the erection of such porches would have been prohibited equally with bay-windows, still the deeds did not in terms prohibit the building of a porch with sides perpendicular to the main wall and solid. Wherever, therefore, an architect has this particular form of restriction to deal with — and similar restrictions, we believe, attach to a great part of the land in the Back Bay originally owned by the Commonwealth — he is at liberty to build porches or porticos with closed sides within the reserved space, though not extending more than five feet into it.

SOCIETIES

BOSTON ARCHITECTURAL CLUB.

THE Boston Architectural Club held its fortnightly *conversazione* Thursday evening, March 14. Mr. Ross Turner, who has been in charge of the water-color classes instituted by the Club, made some informal, but very interesting, remarks on the subject of water-color painting, including a brief summary of the history of the art; its application in ancient times; its more modern development; and the characteristics of the English, French, Spanish, Italian and Dutch schools. The most prominent masters of these various schools were compared and discussed, and, in conclusion, some valuable suggestions were made as to selection of studies, materials, subjects, etc. In the open discussion which followed, Mr. Turner gave in detail the steps he would take in making a water-color from nature, using as illustrations two of his paintings in the possession of the Club — the old Endicott house at Salem, and a large interior of a European church — and he also explained how the same ideas could be applied to the water-color compositions which the architect is called upon to make in ordinary professional practice.

The Club is to hold an exhibition of stained-glass and tile-work, beginning March 25. Contributions have been promised from the leading Boston dealers and manufacturers, and, in addition, there will be exposed a collection of sketches of European glass and tile work.

COMMUNICATIONS

BOULDER-WALLS.

March 9, 1889.

To the Editors of the American Architect: —

Dear Sirs, — I am about to put up a building of stone picked up from the surface of the ground of which there is great abundance in the locality and I propose to use this stone for the exterior facing without any tool work whatever and without even as much as tooled margins to the quoins. The door and window openings will be trimmed with brick.

This style of construction has been illustrated by you frequently, but as my masons have not done any of this work I would like to have some hints for their guidance and for my specification.

I should imagine that such a wall is plumbed from the inside only, a minimum and maximum being given, within which the outside face should come, as for instance, 2′ 0″ and 2′ 9″.

Is this right? and how much variation may there be between minimum and maximum? Is it necessary to rough-cut beds and joints?

What sizes and variations of sizes looks best for stone?

The building is, say, 45 feet square, walls 18 feet high above ground. Will the lichens or surface vegetation on the stones interfere with the adhesion of the mortar.

If you can favor me with some information in your next issue you will very much oblige,

"Lichen."

[Much depends on the stone. In some places the surface stones are tolerably regular in shape, and make a good wall, while elsewhere they are mere rounded boulders. With boulders the whole strength of the wall is in the mortar, which cannot be too carefully made and used. The wall should be built to two faces to look well, whatever may be the allowable projection of the outside stones beyond the mortar joints. Usually, the outside joints are scraped out at the pointing, to give the proper effect of projection. The best appearance is obtained by mixing large and small stones indiscriminately together, but if there is much difference in size the inequality of settlement will cause cracks, and it is safer to have the stones in the courses of approximately the same height. Especially should the use of large stones for the corners be avoided. The corner stone should be long, to tie the angle, but not high, or there will be cracks near them. The brick jambs will do well. In England a wall of this kind sometimes has horizontal courses of brick used to level up a given point, as at the window-sills, with good effect. Lichens would interfere with the adhesion of the mortar. If the mortar is good, the joints need not be dressed, even with rounded stones. Two feet would be rather thin for such a wall, 18 feet high, 30 inches would be much better. Almost any size of stone may be used, avoiding only those which go nearly but not quite, through the wall. — Eds. American Architect.]

NOTES & CLIPPINGS

An Emancipation Monument. — The colored people of Springfield, Ill., have decided upon the erection of a monument in that city to the memory of Abraham Lincoln, William H. Seward, Charles Sumner, Wendell Phillips, John Brown, and soldiers of the late war. The proposed cost of the monument is about $200,000.00, and the fund will be raised by subscriptions from all the colored lodges and churches throughout the country. The association will secure articles of incorporation. — *Exchange.*

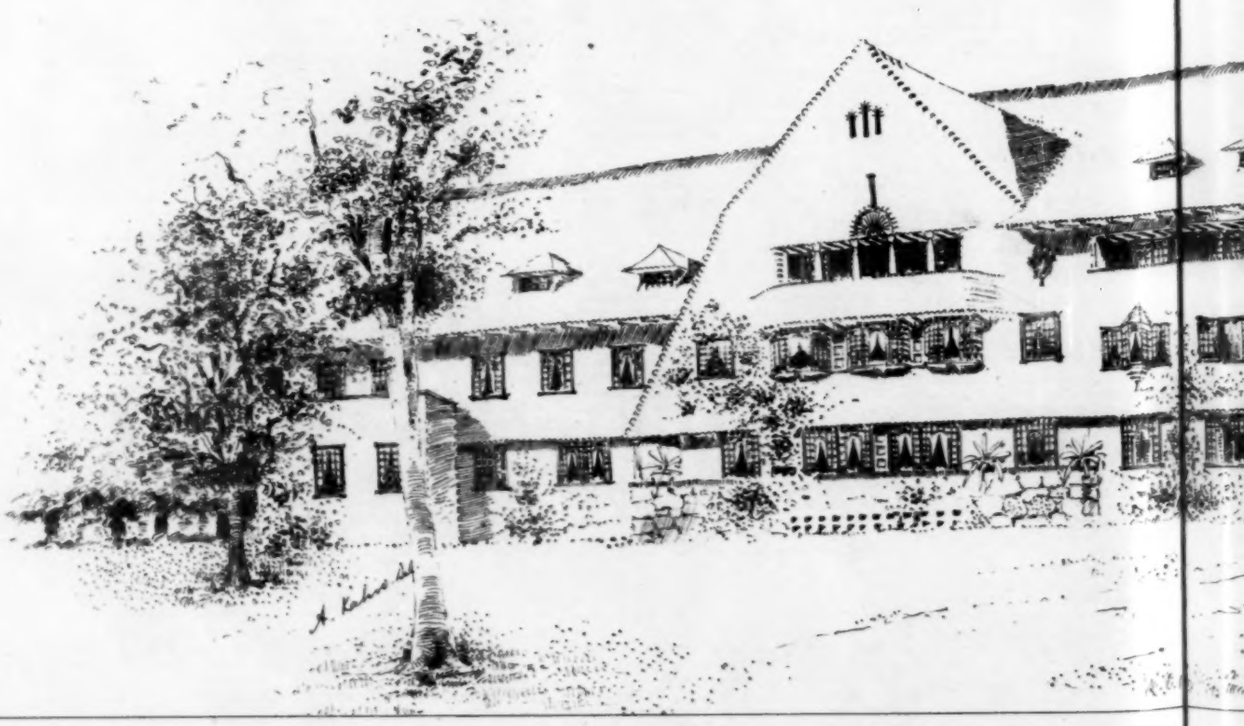
The Flow of Grain. — St. Paul grain men have been vexing their souls over a problem touching a grain-bin and contents. It is this: Given a bin, dump into it, separately, five distinct qualities of wheat; open the spout at the bottom and the query is, which layer of wheat comes out first? The uninitiated say at once, with a few exceptions, "The first layer at the bottom, of course!" W. A. Van Styke was determined to get at the facts, and watched the bin with his eagle eye very closely the other day, after having caused a layer of barley to be placed on top of several layers of different kinds of wheat. The spout was opened and the barley came rushing out first. — *St. Paul Pioneer Press.*

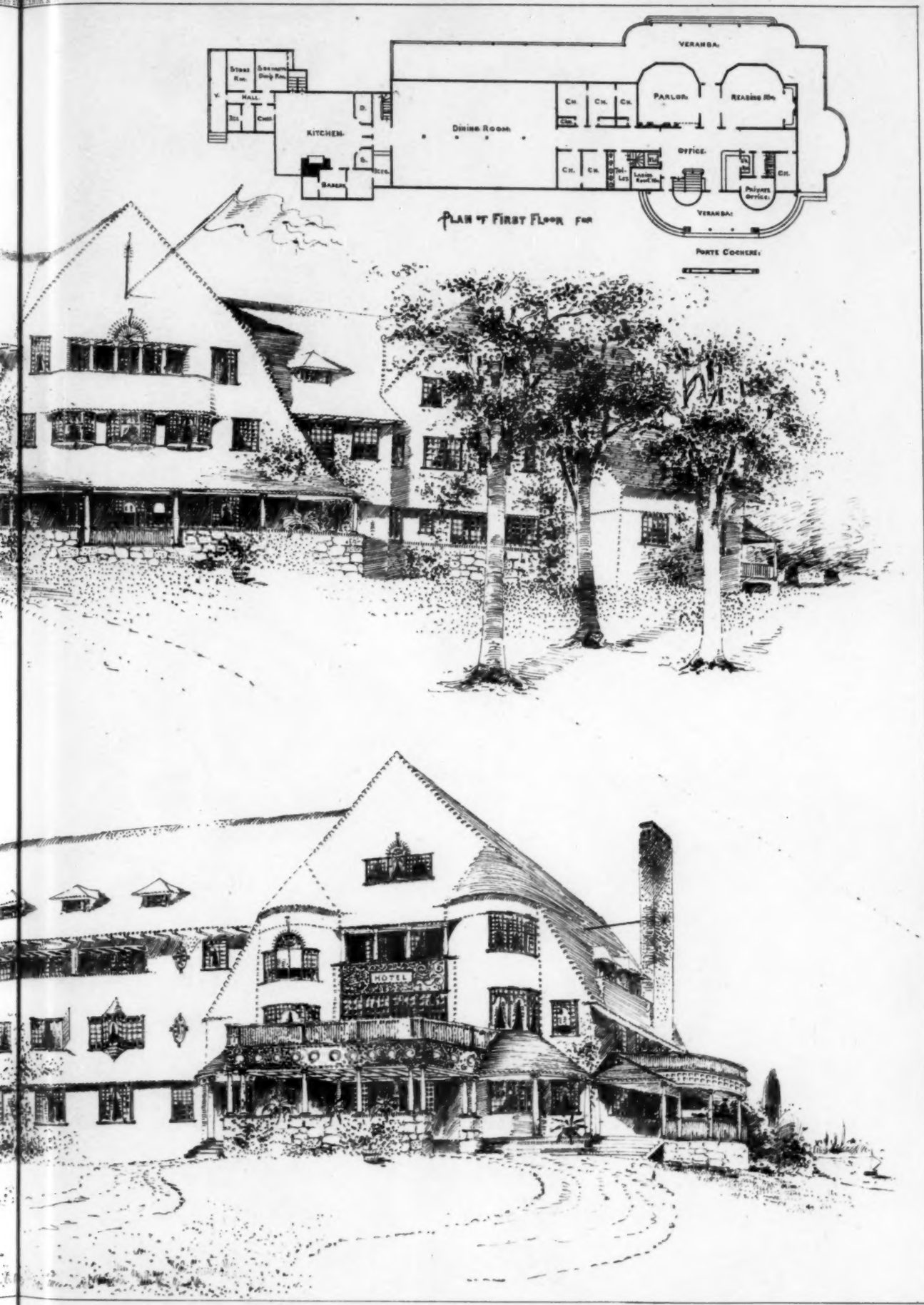
TRADE SURVEYS

Bank deposits and loans have been increasing this year to unprecedented proportions. At New York last Saturday the deposits were the largest ever known, viz., $442,684,000.00, and loans, $420,406,000.00. Northwestern railroads show an increase in earnings. Southwestern roads do not make a good showing. Roads in the Gulf States are carrying increased quantities of freight and the great trunk lines from Atlantic ports are making better returns as to volume. The Inter-State Committee is threatening severer measures unless the law is lived up to. The managers are gradually being disciplined into closer obedience and the commercial public are much pleased at these evidences of coöperation. The rail-makers expect to sell over 200,000 tons of rails during the month of April at $27.00 to $27.50 East and $30.00 to $31.00 West. A new allotment will be made in a few days. Since March 1, over two thousand miles of road have been projected. The talked-of combination of three Western rail-mills will be voted on May 1. The collapse of the copper syndicate is the subject of congratulation among many who feared further combinations in the event of success in that. Rumors are rife of a tin-plate combine, but such a move would only result in the establishment of the tin-plate industry on this side. Every week develops something new in mining operations in the far West. Within a few days several hundred thousand dollars' worth of machinery have been contracted for and also large orders for machinery, tools and equipments have been placed for irrigating purposes. Land speculations on a large scale are in progress by companies intending to improve and develop land. Speculators anticipate an increase in immigration during the next year or two in the far West and are preparing by railroad building, and irrigation to take advantage of it. The demand for machinery of all kinds, and tools is deserving of special remark. The progress made in machinery, tool and implement manufacture has necessitated a great many changes in plants, large and small, and this in addition to the extraordinary increase in mechanical capacity is sustaining an extraordinary demand. But there is an observable scarcity of work nevertheless in many establishments East, due in part to the starting up of new competitive points farther West and in the South. The aggregate demand is larger than even a year ago, except perhaps for locomotive engines. Railroad managers are doing more repairing and making their engines last longer and do more work. Trade and business generally is dull. A sudden apathy has overtaken the leading retail markets. Wholesalers have but little as yet to complain of. A marked restriction is setting in in some branches of the iron trade, although the production of crude iron is but little under one hundred and fifty thousand tons per week and is thirty thousand tons per week over a year ago.

The lumber manufacturers report an increased distribution in nearly all markets. The prospects for a good year are unusually bright, especially in the New England and Middle States. Prices are somewhat higher for yellow pine and poplar. In Chicago, sales of lumber for the first two months this year were 202,000,000 feet, as against 168,000,000 feet same time last year. Stocks on hand March 13 were 533,000,000, as against 481,000,000 a year ago. Gulf State and trans-Mississippi yellow pine manufacturers are chasing each other for control of the Northern and Northwestern markets, and, in consequence, prices are on the down-grade in those markets. The Northeastern supply is practically under the control of an organization, and prices are pointing upward. Extraordinary lumber developments are in progress on the Pacific Coast. The coal trade is sluggish because of the possibility of lower prices, especially in anthracite. The Atlantic soft-coal interests have effected a combination for the season. Western mining regions are averaging three-quarters output. Coke-oven builders are hurrying forward work on new plants. About one oven in thirteen in the Connelsville region is now idle. All the brick-makers will soon be at work. Machinery-makers report large deliveries of machinery, especially in the South. The export of slate is increasing rapidly, most of the increase going to Australia and New Zealand. The production of coal last year is figured up at 145,363,744 tons, as against 129,975,557 tons in 1887; increased value, $26,000,000. Of this Pennsylvania produced last year 76,078,000 tons, or over one-half; Rhode Island produced 6,500 tons, Nebraska 1,500 tons, and Idaho 600 tons, all net. Only one ton out of every thirty-eight tons of anthracite is exported. From nearly all large cities come rather favorable reports concerning building operations. Architects are not rushed with work, but the prospects are good for the season. The erection of small houses will exceed last year's record if opinions are reliable. A great deal of work is to be pushed in small towns and cities; relatively more, so far as accounts go, than in larger cities. A disposition is manifested to get away from cities by many manufacturers operating with necessarily limited capital. Textile manufacturers are slowly increasing their output, especially in cotton and mixed goods. Boot and shoe statistics show a slight increase as against last year. Electrical machinery-makers are very much crowded. Hardware manufacturers are slackening production. Nail-makers are annoyed with large stocks. Bar iron-makers report business very depressed. The key-note of the situation is delay.

LAKE FRONT OF PROPOSED HOTEL
AT KINGSVILLE ONT. MASON & RICE ARCH'TS. DETROIT MICH.





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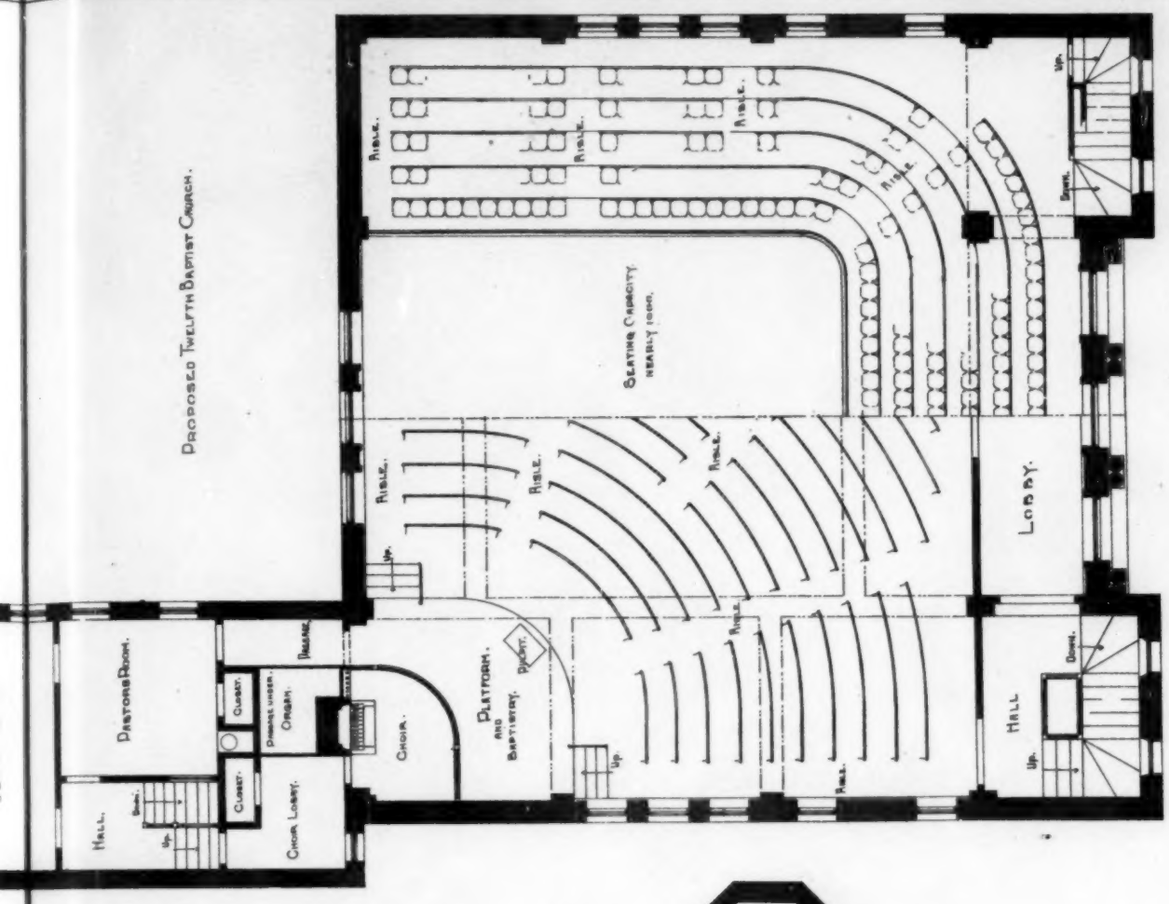

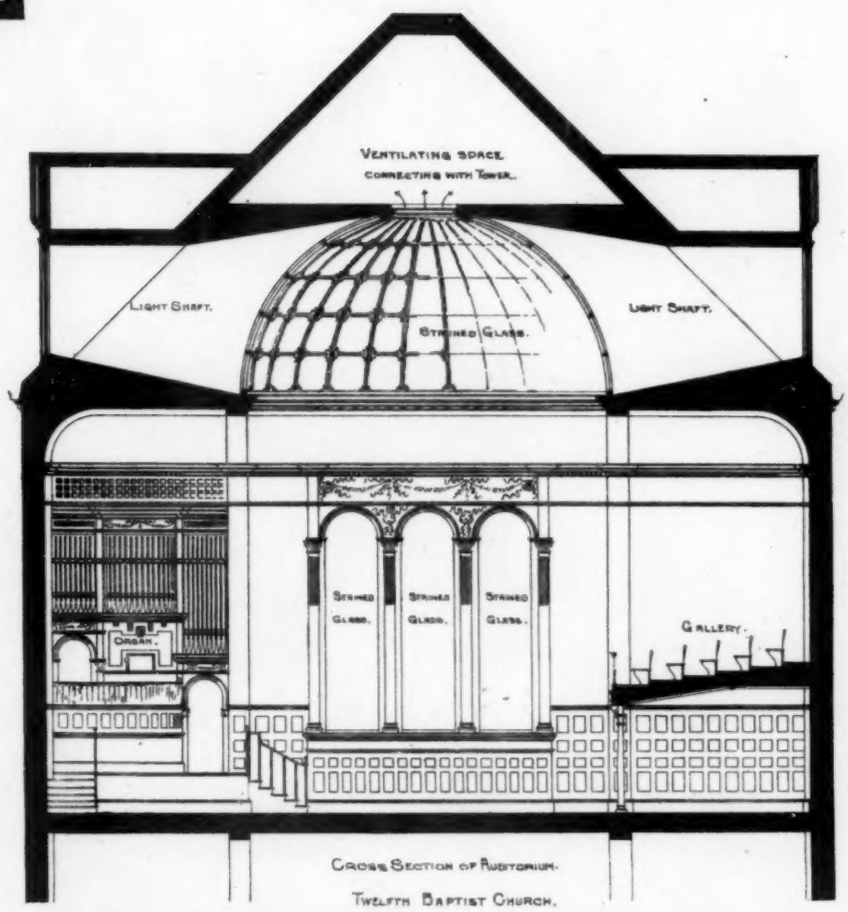

CROSS SECTION OF AUDITORIUM.
TWELFTH BAPTIST CHURCH.

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MASS.
...CHER, ARCHITECT.

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